Journal of

FORESTRY

JUNE 1950

SOCIETY OF AMERICAN FORESTERS 1900

Volume 48
Number 6

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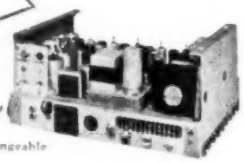

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Journal of Forestry

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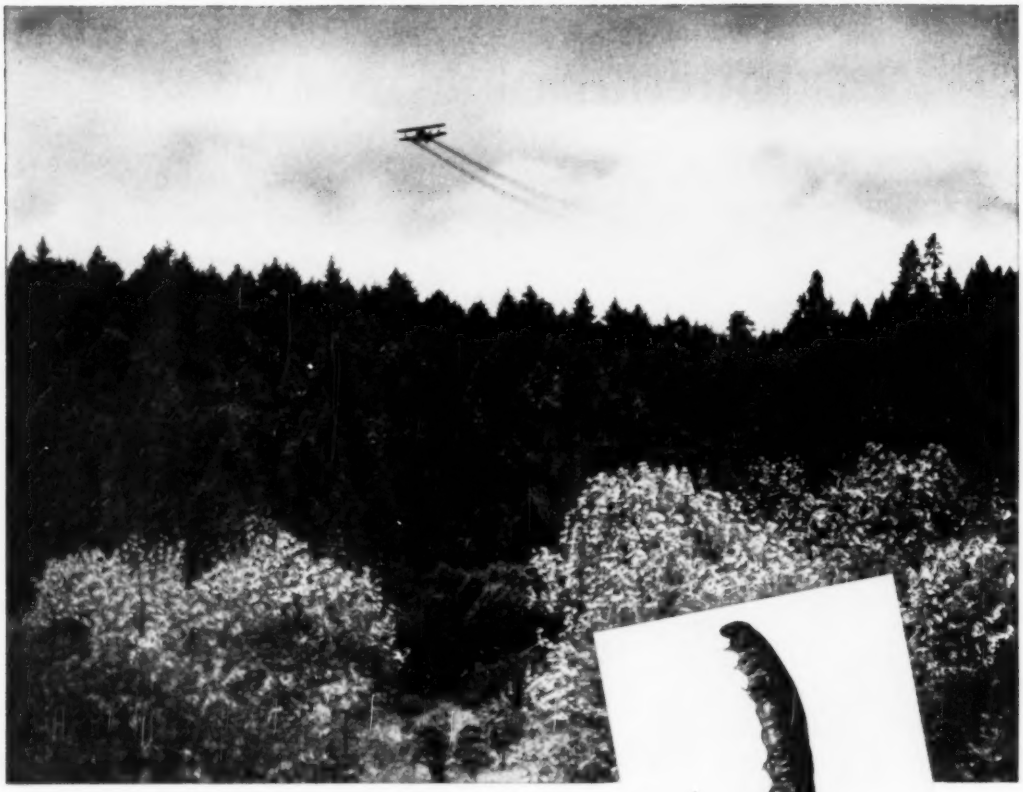

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Journal of Forestry

Official Organ of the Society of American Foresters

How Your Society Office Operates

L. Audrey Warren

Business manager, Society of American Foresters.

ALTHOUGH organized in 1900, for nearly three decades the programs and operations of the Society of American Foresters were carried on by voluntary, unpaid officers. It was not until 1928 that an executive office was established in Washington, D. C. with a salaried employee. At that time Society affairs were organized in accordance with recognized business procedures, and the printing of the JOURNAL OF FORESTRY and all Society activities were centralized in this executive office. Table 1 shows the growth of the organization since that time.

In 1930 the appointment of an executive secretary was authorized for the purpose of expanding the profession's influence, developing Society policy, contacting professional, public, and allied organizations, and promoting Society programs. In 1944 the position of an assistant executive secretary was established by the Council, and on January 1, 1950 the Council appointed a paid editor.

Through its executive staff the Society serves as a clearing house for all professional activities. Although the Council establishes general policy, complete membership participation in all Society affairs is provided through 21 regional Sections (and their Chapters), nine subject Divisions, and some 15 committees.

Society activities fall into five broad categories:

1. JOURNAL OF FORESTRY.

2. Membership services which embrace all administrative operations performed in connection with the business operation of the Society, including the maintenance of membership records, the nomination and admission of members, the election of officers, the arrangements for national meetings of the Society, the conduct of referenda, and other activities benefiting all members alike.

3. Service rendered to the Council, Sections, Chapters, Committees, and Divisions.

4. Technical assistance and services rendered to individual members, including employment assistance and information on technical, professional, and legislative matters supplied on request.

5. Public and professional relations, comprising all activities (exclusive of the JOURNAL OF FORESTRY) for the dissemination of information about the Society and the forestry profession, including cooperative activities with other professional, scientific, and conservation associations.

Journal of Forestry

The responsibility for editing, proofreading, printing, and mailing the JOURNAL OF FORESTRY and other miscellaneous publications is centralized in the executive office.

The JOURNAL began as a quarterly, was later published eight times a year, and since 1935 has been issued on a monthly basis. For many years it was wholly edited outside the Society's executive office. One of the world's foremost professional forestry periodicals, the JOURNAL has grown with the profession until it is now the leading outlet for information about the new techniques and policies shaping the developing of forestry in America. Its current annual cost is more than the amount expended in running the entire Society as late as ten years ago.

In addition to the members of the Society, all of whom receive the JOURNAL, there are about 1500 nonmember subscribers, many in foreign countries.

A manuscript submitted to the JOURNAL for publication is acknowledged to the author, read by the editor, and forwarded to the appropriate associate editor for review. When an article is accepted, a galley proof is sent to author. In the office, galleys of articles are proofread, the JOURNAL is "pasted up," the page proof checked, and the mailing wrappers addressed. These are only a few of the detailed steps required to publish the magazine. Indexing each volume is no small job. Volume 47 was indexed under about 1000 titles and authors.

TABLE 1.—GROWTH OF SOCIETY FISCAL AFFAIRS

Year	Number of members	Income	Expense	Staff
1928	1,350	$13,505	$ 8,719	2
1938	4,340	35,297	36,860	8
1948	6,241	67,677	72,713	9
1949	6,628	81,170	79,430	9

Membership Services

For many years candidates for membership were nominated and elected verbally by those members present at a meeting. Subsequently, nomination forms were used and the original nominations circulated among all Council members. It was not unusual for a year to elapse before a candidate was elected. Successive improvements have been made until the time required to process a nomination after it reaches the executive office is only three months. In 1950 separate nomination forms for each of the four major grades were replaced by one application form.

During 1949, approximately 1500 membership nominations were processed. Over 700 candidates accepted initial election; and more than 600 Juniors were advanced to Member grade, resulting in a net membership increase of 387.

Each membership application is acknowledged and a card made for the master file so that at any stage the status of a nomination is known. A list of candidates is prepared for each issue of the JOURNAL. Upon their election, both the candidates and their Sections are notified, and the names of those elected are published in the JOURNAL for the information of the membership.

Believe it or not, about ten percent of the total number of S. A. F. members change their addresses *every month*. Changes of address are received from postoffices as well as from the members themselves. Acknowledgment of each change is made to the Section secretary; and when a member leaves the territory of one Sec-

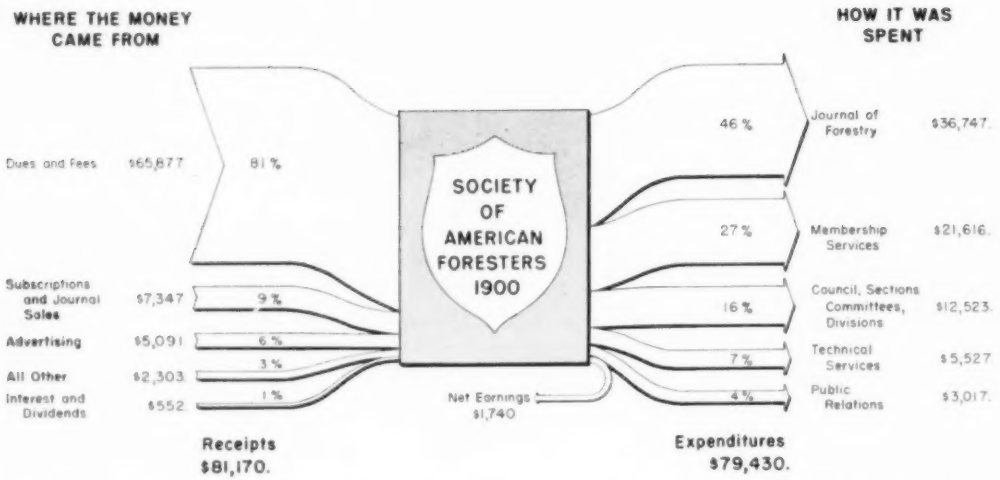

FIG. 1.—Society receipts and expenditures for the fiscal year 1949 (December 1, 1948 through November 30, 1949).

tion for that of another, both Section secretaries are notified.

A membership list is made annually—oftener on request—for each Section secretary, giving each member's name, address, and date of election. The Society maintains not only a stencil file for addressing JOURNAL wrappers and other mailings, but a master checking file which includes individual cards for current members and JOURNAL subscribers, and even former members.

A special membership record is made at the end of each year to show the number of new members and cancellations, and the number dropped for nonpayment of dues, resigned or deceased. A hand count of the circulation of the JOURNAL is taken twice a year, generally in June and December.

Membership dues are payable the first of January. About five bills for dues are sent to members during the year.

Election of candidates to membership represents a tremendous amount of detail work on the part of the Sections, the executive staff, and the Council. Extreme care is exercised in checking the applications. The Council is most conscientious in its efforts to uphold the high standards of membership.

A directory of members is scheduled for publication this summer, the first since 1939.

Another of the Society's best known services in this category, benefitting all members and the profession alike, is the accrediting of professional forestry education. This activity is so important to the maintenance of high professional standards that the Council has authorized expenditure of $2500 for this purpose during the academic year 1950-1951. Even so, the total cost, much of which is contributed gratuitously, greatly exceeds this amount.

Services to the Council, Sections, Chapters, Committees, and Divisions

A real service which the executive office renders the Sections is the collection of Section dues. Prior to the time, about ten years ago, that the executive office began to collect dues for the Sections, the collections frequently were as low as fifty percent. Now the Sections receive, through the executive office's facilities, almost one hundred percent of their member's dues.

It is the desire of the executive office to render increasing services to the Sections and Chapters, and the cooperation of their officers is requested in devising ways and means of improving the present services. It is realized that as the Sections grow, the burden of routine on unpaid officers constantly increases.

To aid the Sections and Chapters in the more orderly conduct of their activities, the executive office recently compiled and distributed a *Section Manual*.

Considerable aid also is given to Committees and subject Divisions. It is the duty of the executive office to lighten this burden in every way possible, and provision is made in the budget to do so. Unlike the Sections, the Society's nine subject Divisions do not have income from dues. Necessary expenses incurred by the officers in the conduct of Division activities are reimbursed out of the Society's general funds.

An up to date roster of Section officers is published in the JOURNAL about six times a year. Lists of Division officers and committee personnel are published usually twice a year.

Technical Assistance

The executive office renders many professional and personal services to Society members. Some of the most important of these are employment assistance, providing information on legislation in Congress, serving as a clearing house for information about technical matters not readily obtainable elsewhere, maintaining profes-

TABLE 2.—WHERE YOUR SOCIETY'S MONEY CAME FROM
(During the fiscal year 1949)

Sources of income	Income from each source	Percent from each source
Dues and fees[1]	$65,877	81
Subscriptions and Sales of Journal	7,347	9
Advertising	5,091	6
Interest	552	1
All other	2,303	3
Total	$81,170	100

[1] Based on 6,400 members; $5 of each member's dues was allocated for subscription to the JOURNAL OF FORESTRY.

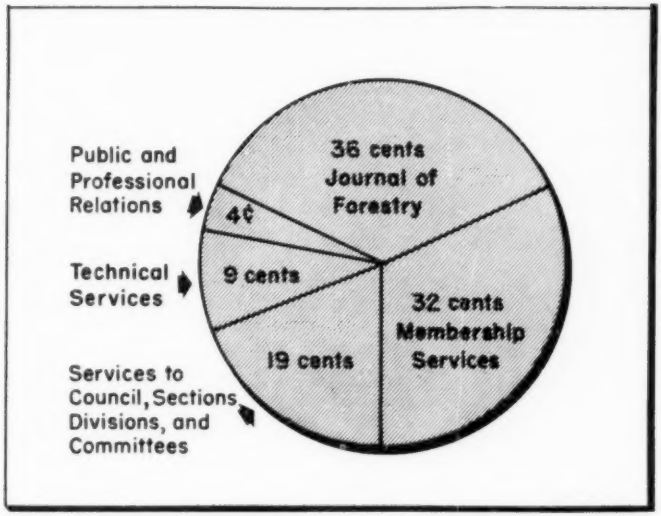

FIG. 2.—How the average member's dollar was spent during the fiscal year 1949.

sional records of members, and placing the facilities of the Society at the services of individual members for any appropriate purpose.

For example, members needing technical or scientific books in connection with their professional work can obtain them through the Society's executive office, and what is more, at a 10 percent discount off the publisher's price.

The number and variety of requests for technical assistance are increasing constantly. This is a service which the Society's executive staff especially delights to perform, and members should never hesitate to make use of it.

Public and Professional Relations

Representatives of the Society serve on several joint committees with other scientific organizations such as the American Association for the Advancement of Science, the National Research Council, and the American Society of Mechanical Engineers. The Society also cooperates with the American Forestry Association, the Charles Lathrop Pack Forestry Foundation, the Wildlife Management Institute, and other conservation organizations; and disseminates information about the Society and the forestry profession among them. Membership is held by the Society in the American Institute of Biological Sciences and the Natural Resources Council of America.

Among the many organizations with which the Society enjoys cooperative relations are the American Forest Products Industries, and the several national and regional trade associations. As the foresters entering industry rise to positions of executive responsibility, the Society is increasingly afforded opportunities for helping enlarge the area of commercial timberland under management.

To be successful all these activities must be, and are, coordinated with the regular, recurring administrative functions of a busy office.

In addition, there are frequent large mailings of ballot runs, ballots for election of officers, referenda, annual meeting letters, and original work initiated by the Council, president, and executive secretary.

Finances

A complete set of standard double-entry books is maintained in the Society office, subject to semi-annual audit by a certified public accountant. Employees handling money are under bond. All expenditures are made under a budget approved by the Council.

The Society is exempt from the payment of corporation, income, and Social Security taxes. Recently it was ruled that payment of D. C. sales tax is not required. Society members may deduct from income tax returns the amount of dues paid to the Society.

From time to time members have inquired about the division of expenses in running the Society. In order to show the cost of operation per member, the accompanying charts and tables have been compiled to show where the money comes from, and where it goes.

Table 2, showing where the Society's money comes from, should be of more than casual interest. As a matter of further information the executive office is trying hard to increase income from advertising, and, as is now perhaps well known, the Council last year authorized the appointment of an advertising representative for that purpose.

Table 3 shows the five main services

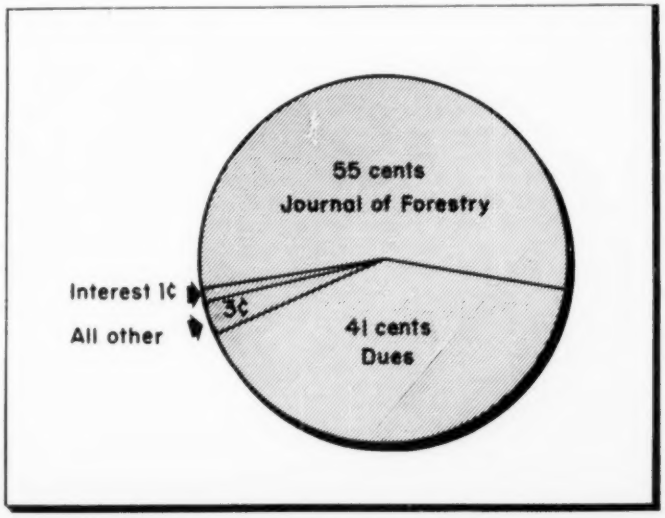

FIG. 3.—Sources of the Society's income dollar in 1949.

TABLE 3.—SERVICES FOR WHICH YOUR SOCIETY'S MONEY WAS SPENT[1]
(During the fiscal year 1949)

	Journal of Forestry (1)	Services to Council, Membership services (2)	Sections, Divisions, Committees (3)	Technical services (4)	Public and professional relations (5)	Total
Total expenditures	$36,747.00	$21,616.00	$12,523.00	$ 5,527.00	$ 3,017.00	$79,430.00
Percentage of total costs	46	27	16	7	4	100
Cost per member[2]	$3.80	$3.37	$1.96	$ .87	$ .46	$16.46[3]
Percentage of each member's dollar	36	32	19	9	4	100

[1] Allocation of administrative expense including rent, postage, salaries, office supplies, depreciation, travel, miscellaneous printing, and all general expense, has been made to each of the five Society activities.
[2] Based on 6,400 members.
[3] This is the total cost per member to provide all services rendered.

for which the Society's money was spent in 1949. This table may appear a little complex at first sight, but it is really simple, and is well worth your study. Note especially how the percentages of the total costs of running the Society are charged against the five principal expenditures.

The executive office, and doubtless the Council also, will be glad to know whether our members agree that these percentages represent a reasonable division of expenses.

Please note also what the costs are per member for each of these services. Finally, your attention is directed to the figure ($16.46) representing the total cost per member for all services.

Any member who desires to comment on these figures is welcome to do so. After all, this Society belongs to the members, and they are at perfect liberty to express opinions about its operations.

Your staff employees hope that this outline of the operation of the executive office has been of interest. It is, of course, much too brief to describe all the various functions carried on; many, in fact, are strictly routine in character and consequently not of general interest. However, if any members desire additional information on any phase of the Society's administration, we shall be most happy to supply it.

Members Oppose Regulation Principle

In the referendum held on May 26 by the Society of American Foresters, a majority of the members voting went on record as opposing regulation of private forest management by the federal government.

The specific question on which the vote was taken by mail ballot was: "Shall the Society of American Foresters through its Council favor or oppose the principle of federal regulation of private forests, and federal legislation looking to the establishment of this principle?"

Of 3,652 valid ballots cast, 2,545 members voted to oppose, and 1,107 voted to favor the principle of federal regulation. About 40 percent of those eligible to vote did not return ballots.

Commenting on the referendum in a statement for the press, Charles F. Evans, president, said, "It should be noted that the referendum did not cover the general principle of regulation of private forests and, therefore, leaves the question open as to whether the members now favor regulation by state or other local units of government. A previous referendum held in 1944 and approved by a substantial majority vote endorsed 'in principle public regulation to the extent necessary in each local situation to prevent destruction of forests and to keep forest lands reasonably productive.'"

Effect of Some Physical Soil Properties on Douglas-Fir Site Quality[1]

Stanley P. Gessel and William J. Lloyd

Instructor[2] of forest soils, College of Forestry, University of Washington, Seattle, and forestry specialist, Soil Conservation Service, Sedro Woolley, Wash., respectively.

The soil is a basic forest resource. This article describes how soils information can be used to determine the productivity of forest land. Certain properties of the soil important in management plans are also discussed.

A RECENT STUDY by Hill, Arnst, and Bond (*2*) indicated that soil profile groups as defined by the Soil Conservation Service could be used to predict site class for Douglas-fir. The results were applicable to the residual soil of Lewis County, Wash. The present study was carried out to test the validity of the method on soils of glacial origin in northwestern Washington.

The area included in this study is largely within the boundaries of Whatcom, Skagit, and Snohomish Counties. These counties are bordered on the west by Puget Sound and on the east by the crest of the Cascade Mountains. Whatcom, the northernmost county, borders Canada.

The study area proper included only the lands between Puget Sound and the foothills of the Cascades. No samples were taken at elevations greater than 800 feet and the majority were below 500 feet.

Topographically this area is characterized by numerous streams which rise in the higher Cascades and flow west to Puget Sound. These streams dissect the low rolling uplands between the Cascades and the Sound and make a pattern of alluvial bottoms, upland plains, and rolling, hilly uplands extending to the Cascades. The principal streams of the region, from north to south, are the Nooksack, the Skagit, the Stillaguamish, and the Snohomish. These larger streams have carved deep valleys which extend into the Cascades proper. The elevational rise along these valleys is small, and low-elevation agriculture and forest land occur at distances up to 40 miles from Puget Sound. The main range of the Cascades is about 20 miles from the Sound. Small low-elevation mountain masses occur in the region between the Sound and the Cascades. In the lower Skagit Valley these low hills are entirely surrounded by alluvial flats.

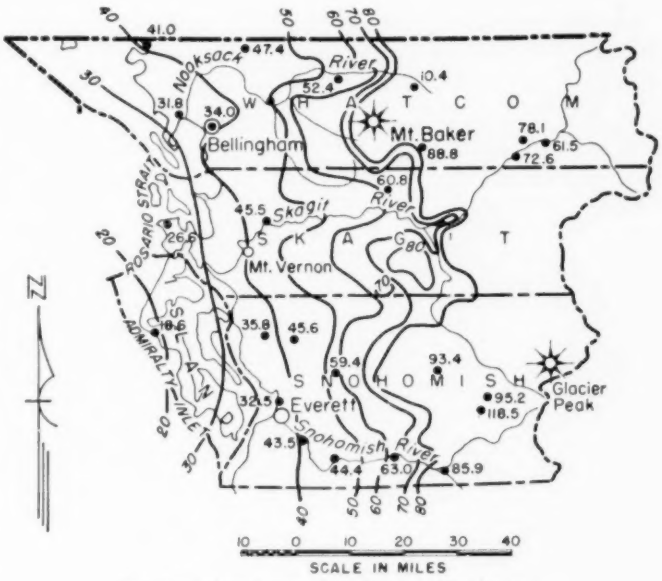

Fig. 1.—Isohyetal map of northwestern Washington.

All the low-elevation bench and uplands have been subject to glacial action from the Puget Sound glaciation. Most of the soils have developed either from glacial till or from outwash materials (*1*). There are extensive deposits of gravelly and sandy parent materials, making coarse and light soils common throughout the area.

The climate of the lower elevations of northwestern Washington is of the marine type resulting from the prevailing westerly winds. The summers are cool and relatively dry; the winters are mild and wet. Seventy-six percent of the yearly precipitation occurs between October 1 and March 31 (*4*).

Local climates change rapidly with increase in elevations and distance from Puget Sound. Precipitation increases from a low of 25 inches on the western edge of the area bordering the Sound to over 100 inches in the mountain areas (Fig. 1).

Promixity to mountain masses also brings about increases in rainfall. Mean annual rainfall increases from 26 inches at Anacortes near the mouth of the Skagit River to 80 inches at Marblemount on the upper reaches of the river. There is less than 300 feet elevational difference between those stations, but Marblemount is 60 miles from the coast in the gorge of the Skagit River.

Temperature and growing season

[1] This study was made possible by the cooperation of the Soil Conservation Service. S.C.S. personnel in northwestern Washington aided materially in securing and analyzing the data.

[2] Formerly forest soils specialist, Soil Conservation Service, Sedro Woolley, Wash.

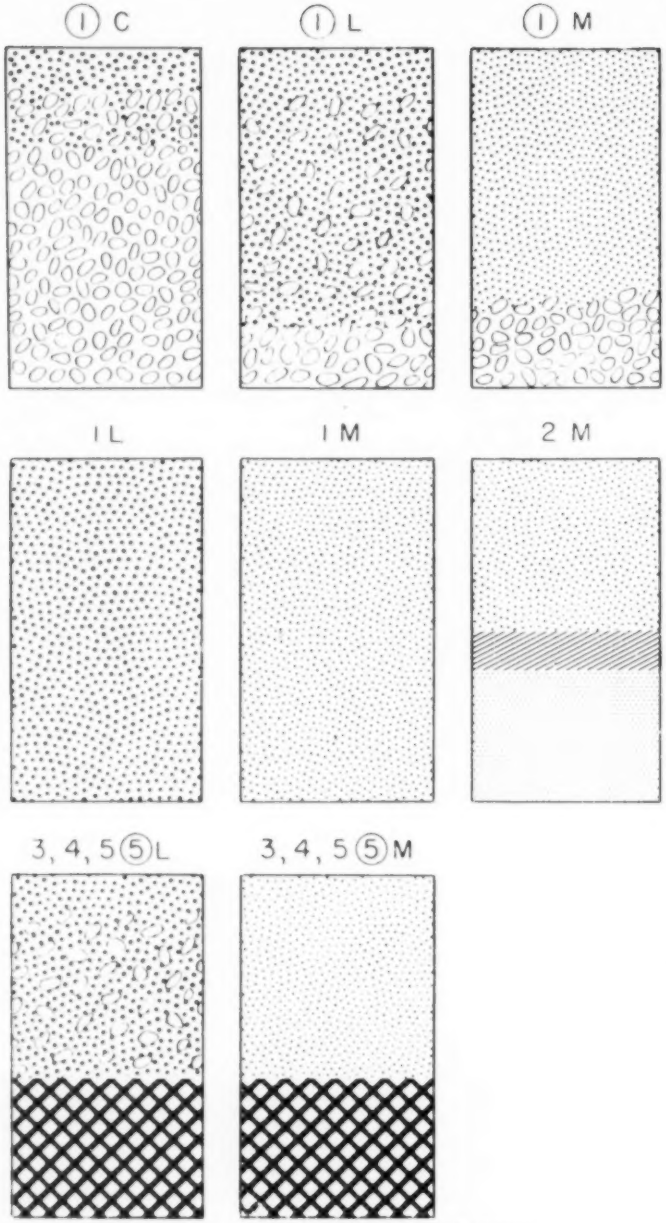

Fig. 2. Forest soil profiles of northwestern Washington.

1 C Coarse-textured, uniform soil profiles, over open gravels or coarse sands.
1 L Light-textured, uniform soil profiles, over open gravels or coarse sand.
1 M Medium-textured, uniform soil profiles, over open coarse sand or gravel.
1 M Deep, medium-textured soils, uniform throughout the profile, over unconsolidated material.
2 L Deep, light-textured soil profiles, over unconsolidated material, with a moderate restriction in the profile.
2 M Deep, medium-textured soil profiles, over unconsolidated parent material, with a moderate restriction in the profile.
3 4, 5 ⑤ Soil profiles characterized by presence of some type of hard pan or definite restriction. These were subdivided on the basis of depth to the impermeable layer and texture of surface soil.

change abruptly with altitude. In addition there is a slight temperature decrease from the southern end of the area to the northern end. However, there are extensive areas between Puget Sound and the Cascades over which the elevation changes and the temperature changes are not large. Mean annual temperature averages about 50 degrees Fahrenheit in this belt. At the same time, precipitation increases markedly. This gives rise to belts of almost the same growing seasons that have distinctly different total rainfall (Fig. 1). The study was concentrated in these low-elevation precipitation belts.

Methods

Data on soils and forest growth were collected by sampling 186 suitable stands of Douglas-fir throughout the area. These were between the ages of 30 and 90 years, vigorous, and generally well stocked. Site index of each stand was determined by the height-age relationship of dominant and codominant trees (*3*). Heights of 5 to 10 dominant and codominant trees were determined by Abney level and tape. The age of the stand was determined at the same time by increment borings of 5 to 10 trees.

The soil on which each stand was growing was examined concurrently. Profiles were examined by means of augers and a shovel to depths commensurate with the profile. Each sample area was classified into a rainfall belt by reference to the previously prepared isohyetal map.

Soil mapping units have been established by the Soil Conservation Service to summarize pertinent data essential to farm planning and are in common use in northwestern Washington. Accordingly, soils were described in terms of these profile classes. Soil Conservation Service farm plans covering many farm woodlots were an aid in describing soils in terms of these units.

All soil profiles examined were classified as shown in Figure 2.

Douglas-fir stands on heavy-textured soils were not abundant enough to be included in this study.

TABLE 1.—RELATIONSHIP BETWEEN SOIL GROUPS, SUB GROUPS AND SITE INDEX BY PRECIPITATION BELTS, FOR FOREST SOILS OF NORTHWESTERN WASHINGTON

Soil Group	Precipitation Inches	Site Index 100	110	120	130	140	150	160	170	180	190	200	Total Number	Average Site Index	Standard Deviation	Coefficient of Variation	Standard Error of Mean
① L&M	25-30			2	3	3							8	131.4	8.2	6.1	2.9
1 L&M	25-30						1	1					2	158.0			
① C	25-30			2									2	125.0			
① L	35-45		2		6	5	6	11					13	150.0	16.0	8.9	2.8
① L	35-45				2	2			4		6		24	150.6	10.2	6.5	2.1
① M	35-45							2		3			15	176.3	9.9	5.6	2.6
① C	45-60	2		1	4	2							9	116.7	14.1	12.0	4.6
① L	45-60						5	4		1			9	143.1	5.4	3.7	1.8
① M	45-60						1		3	4	3		12	170.4	11.3	6.6	3.3
2 L	40-50							1	3				4	165.0	8.2	5.0	4.1
1-2 M	40-50									2	1		3	181.7	3.1	1.7	1.7
3,4,5, ① L&M	25-30			2	4	3							17	134.0	11.9	8.9	3.0
3,4,5, ② M	30-35				2	5	1						8	145.8	5.3	3.6	1.8
3,4,5, ⑥ L	35-50							6					6	160.0			
3,4,5, ① M	35-50								10	5	1	2	24	178.5	9.0	5.1	1.8
3,4,5, ⑤ M	35-50					3	2	1	4				10	156.0	13.4	8.6	4.2
Shallow 3,4,5, ⑥ M	35-50							1	3	3	8	4	18	183.6	12.7	6.9	3.0
3,4,5, ⑥ M	50-60			1	1	1							4	136.0			
Shallow	50-60																

Results

Site indices on ① and 1-2 profiles.—When ① profiles from the same precipitation belt are compared by textural classes, significant differences in site index are observed. (Table 1 and Fig. 3). For the 35 to 45-inch precipitation belt the average site index increased from 125, to 150, to 176 with a change in texture of surface soil from coarse, to light, to medium. For the higher precipitation belt of 45 to 60 inches, the increase in average site index was from 117, to 143, to 170 with a textural change from coarse, to light, to medium. In the low rainfall belt (25 inches) on Camano Island, stands of Douglas-fir were not found on ① M soils or on very coarse ① C soils. On the basis of the samples taken there was no difference in average site index on ① L and ① C soils. These samples were therefore grouped for further comparisons.

Only limited data are available for profile groups 1 and 2. However, site index increases with increase in fineness of texture in these profiles. Site index was 165 for the light soils and 186 for the medium-textured soils. Both of these indices were higher than for the same texture groups of the ① profiles. The number of samples in the 1 and 2 profile is too small to attribute significance to these results.

Site indices on 3, 4, 5, and ⑤ profiles.—Sufficient samples were available to compare the effect of depth and texture on site index only in the precipitation belt of 35 to 50 inches for these profiles. Site index was reduced from 178 to 156 when depth to an impermeable layer was less than 24 inches for medium-textured soils of low gravel content. Site index was reduced from 178 to 160 for soils over 24 inches deep when a large amount of gravel or sand was present in the surface soil (Fig. 3 and Table 1). Small to moderate amounts of gravel in the surface soil did not affect the index.

Comparison of site indices on ① and 3, 4, 5, ⑤ profiles.—For the same rainfall belt and for soils of similar texture ① profiles have

about the same index as 3, 4, 5, ⑤ profiles. In the 25- to 30-inch rainfall belt site index on both ① L and M and 3, 4, 5, ⑤ profiles average 134. For the 35- to 50-inch rainfall belt ① M profiles had an index of 176, while the average index of 3, 4, 5, ⑤ M profiles was 178. Differences in site index appeared in the high rainfall belt of 50 to 60 inches as ① M profiles averaged 170 and 3, 4, 5, ⑤ M profiles averaged 184 in site index (Table 1).

The Relation of Site Index to Precipitation

① *Profiles.*—When ① profiles are compared by textural classes, site index increases with increase in precipitation from 25 up to 40 inches for the light and medium-textured soils. All textures were grouped at 25 inches of precipitation. Though site differences were apparent, all sites were low, and the samples were not numerous enough to detect significant differences. Site index on coarse-textured soils decreased as rainfall increased from 25 to 40 inches. If it had been possible to segregate textures in the low precipitation belt, this might not have been true. For precipitation greater than 40 inches, site index decreases with increasing rainfall for ① profiles of all textural classes (Fig. 4). This decrease in site index for precipitation greater than 40 inches may not be significant, but the fact that precipitation in excess of this amount does not result in an increase in site index needs to be further considered.

As stated previously, most of the precipitation in northwestern Washington falls during the non-growing season. For example, Anacortes (26.6 inches total) has 3.9 inches of rainfall, or 14.5 percent of the yearly precipitation during the months of June, July, and August. Concrete, (60.8 inches total) has 5.1 inches or 11.7 percent falling during the same summer months. Precipitation during the growing season at the elevations included in this survey is in the form of showers, and it is doubtful whether enough penetrates the forest canopy and litter

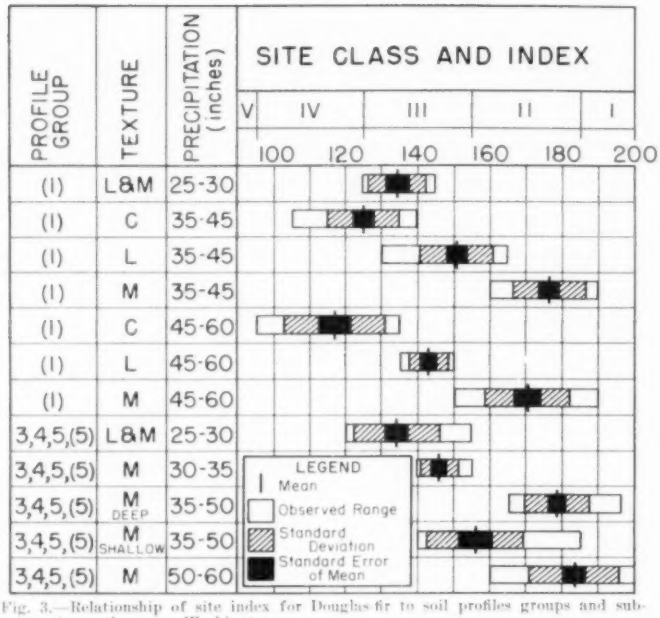

Fig. 3.—Relationship of site index for Douglas fir to soil profiles groups and subgroups in northwestern Washington.

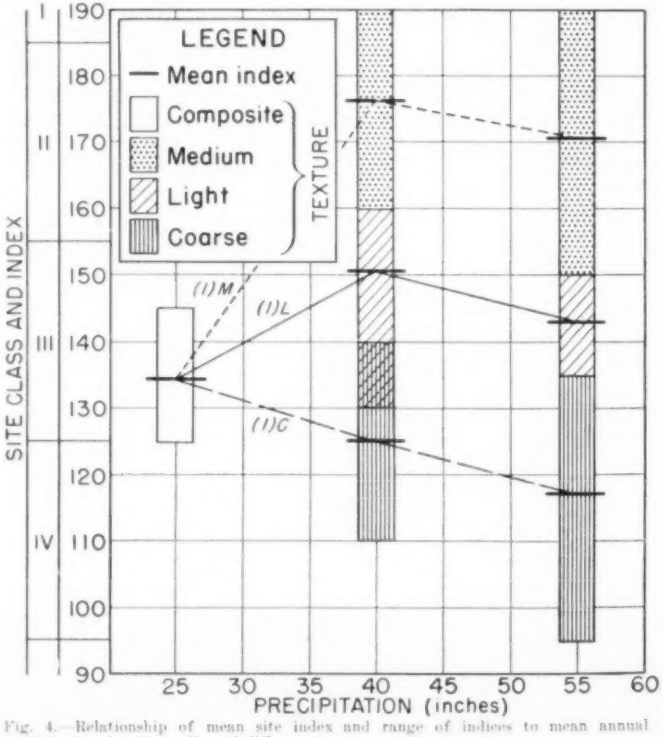

Fig. 4.—Relationship of mean site index and range of indices to mean annual precipitation for ① profiles of different textures.

cover to benefit growth materially. The authors have frequently been amazed to find the litter and surface soil entirely dry under a Douglas-fir canopy following rather heavy summer rains.

In view of this, the conclusion seems justified that Douglas-fir growing in this region must, for the most part, depend on moisture stored in the soil profile at the beginning of the growing season. A 35- to 40-inch mean annual precipitation is sufficient to bring soil moisture up to the field moisture capacity of the profile, and precipitation in excess of this is of little value. Rainfall exceeding the storage capacity of the soil has no favorable effect and may actually be deleterious because of excessive leaching.

The conclusion that site index may have decreased with rainfall above 35 to 40 inches because of decreased length of the growing season and lower temperatures, should not be overlooked. As the high rainfall occurs at slightly higher elevations, this might be possible. However, sufficient climatic data are not available to check further on this hypothesis.

3, 4, 5, and ⑤ profiles.—For the low rainfall belt of 25 to 30 inches no relationship between depth, texture, and site index was apparent. There seemed to be two separate populations in the samples, but the reasons for this were not disclosed by the type of soils examination made. Figure 5 shows site index increase with precipitation on these profiles when the populations are combined and when they are separated.

Site index on these profiles increases rapidly with increase in annual precipitation from 25 to 40 inches. With an increase in rainfall to 50 to 60 inches the increase in site index is small. The range of indices extends to a lower value for this high-rainfall area than for the 40-inch precipitation.

Apparently the same factors are in operation in these profiles as in group ①. At mean annual rainfall below 40 inches the profile is not at field moisture capacity at the beginning of the growing season. After the precipitation is sufficient to saturate the profile, further rainfall during the non-growing season is of little value.

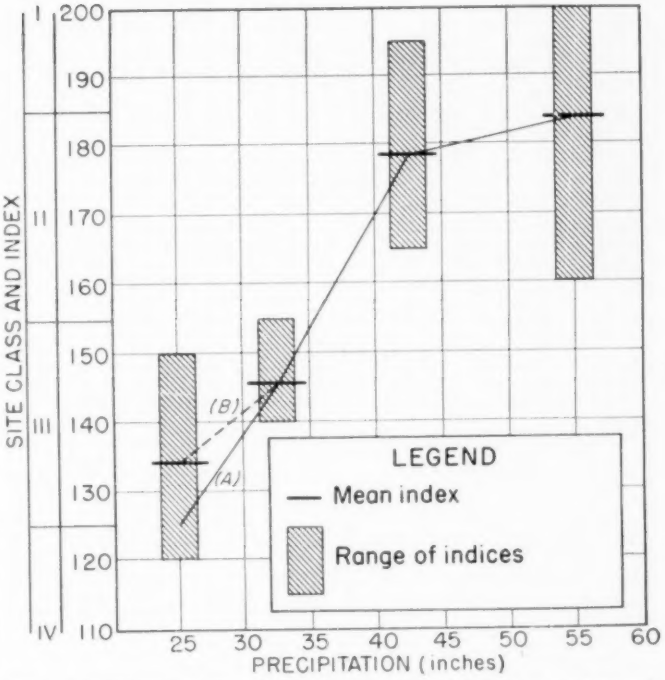

Fig. 5.—Relationship of mean site index and range of indices to mean annual precipitation for 3, 4, 5, ⑤ profiles: (A) when low precipitation sites are subgrouped; (B) when low precipitation sites are combined.

No significant differences were apparent between site indices on southern and northern exposures on the basis of the samples taken.

Discussion

The results of this study indicate that it is possible to predict forest productivity of soils in northwestern Washington. Those characteristics which seem to determine the value of a forest soil are disclosed by Soil Conservation Service surveys and classification of soils for farm plans if annual precipitation is considered. Therefore, forest crop productivity can be directly estimated from these surveys. The importance of recognizing productivity of forest soils and setting up suitable management programs is emphasized by the large acreage in northwestern Washington now supporting neither agriculture nor forest crops.

Soil profiles and windfalls.—Although no quantitative data were gathered showing the number of windfalls on each type of profile, general observations were made. Windfalls were definitely more numerous on profiles 3, 4, and 5 than on profiles 1, 2, or ①. It was often difficult to traverse areas of profiles 3 and 4 soils, especially the more shallow ones, because of the number of down trees. Windfalls were almost non-existent on ① profiles. The fact that some forest soils are more susceptible to windfall damage than others should be considered in silviculture and management plans.

Summary

A forest soil-site survey in northwestern Washington during the summer of 1949 indicated that productivity of land for Douglas-fir growth could be predicted from soils information. Site index on all soils examined increased with change in texture from coarse to

light to medium. Heavy-textured soils were not included in the study. Medium-textured soils of different profile groups did not differ significantly in site index. Depth of soil was an important factor for those soils underlain by a hardpan or by bedrock.

Site index on the same soil profile and texture group was related to mean annual precipitation. Site index on ① soils increases with increasing precipitation up to 40 inches. Above this amount of rainfall site index decreased for coarse, fine, and medium-textured soils. Site index on soils underlain by an impeding layer increased with precipitation up to 60 inches. The greatest increase was up to 40 inches and above this amount the change in site index was small.

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Deer and Cattle Range Relationships on Oak Creek Range in Utah

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MANY OF UTAH'S BIG GAME-livestock ranges are seriously depleted. Too many animals—in some places livestock, in others big game, and in still others both—have depleted the forage supply and reduced the protective watershed cover. Balanced use of the range resource, in terms of proper numbers of grazing animals, is urgently needed if this resource is to be preserved and improved, and if other land values are to be maintained. To reach this kind of balance, certain questions need to be answered and these answers in turn need to be applied in the management of grazing animals and the grazing resource. Studies to provide usable data upon which to base good management of game, livestock, and range were begun at Oak Creek, in south central Utah in 1947. This is a progress report of two phases: (1) deer herd population and productivity studies, and (2) deer-cattle grazing patterns and forage preference studies.[1]

The Oak Creek study area is a natural deer herd unit and a range cattle allotment. It covers an area of about 49 square miles, and extends from the valley at about 5,300 feet elevation up to the Canyon Mountains divide which averages 8,000 feet. Terrain at the higher elevations is very rough and steep.

Juniper (*Juniperus utahensis*) with various mixtures of sagebrush (*Artemisia tridentata*), bitterbrush (*Purshia tridentata*), and cliffrose (*Cowania stansburiana*) cover the foothills. These foothills are deer winter range and cattle spring and fall range, and make up about 36 percent of the total management unit. Oak (*Quercus gambelii*), oak-sagebrush, and other mountain browse types cover most of the summer range. Aspen and coniferous timber types are limited to small patches at higher elevations and northerly slopes.

History of the deer herd.—The history of the deer herd within the Oak Creek study area undoubtedly parallels that of many other herds throughout Utah. At the time the Mormon pioneers came into the region around the middle of the last century, deer were apparently common but not nearly so plentiful as they are today. Unregulated hunting resulted in near extermination of the deer by the close of the past century. It was not until after several years of closed seasons, limited hunting, and concentrated predator control that the deer were able to increase. From about 1920 to 1940 they increased rapidly, especially during the latter part of this period. In 1921 only 5 bucks were reported killed in the study area as compared to 316 actually checked during the 1939 hunt. Until 1940, does were not taken and it was probably in that year that the peak population was reached. However, in 1940, 1941, and 1942 the Board of Big Game Control authorized the sale of 1,000 doe permits for the Oak Creek management unit. These heavy removals helped to alleviate the overstocking of the range. Since 1943, between 300 and 500 doe permits have been authorized annually (except for 1946 when none were authorized) which has tended to stabilize herd numbers.

Cattle use.—Cattle have grazed the Oak Creek area since early settlement. Numbers were unrestricted for many years and it was not until after a range inventory was made in 1921-24 that action was taken to adjust grazing use to forage supply. In 1921 Forest Service permits totaled 21,820 cow months on the Oak Creek grazing division. Reductions for range and watershed protection brought cattle use down to 11,080 cow months in 1946 and to 7,044 in 1948.

[1] These studies were done as a part of the Utah Cooperative Big Game, Livestock, and Range Relationship Research Project conducted jointly by the Utah State Fish and Game Department, U. S. Forest Service, U. S. Fish and Wildlife Service, and Utah State Agricultural College. Deer herd studies reported here were carried out by the U. S. Fish and Wildlife Service and the grazing and forage studies by the Intermountain Forest and Range Experiment Station, U. S. Forest Service.

Range condition.—Range survey reports show that most of the better forage plants on areas readily accessible to cattle were largely destroyed by 1921. Cheatgrass (*Bromus tectorum*) had replaced perennial grasses. Aspen reproduction was reported as being killed and oak sprouts along the creeks were kept browsed to the ground. This severe overgrazing was done by cattle before excessive deer numbers became noticeable. A good growth of deer forage was produced during a long period on areas inaccessible to cattle. This no doubt made it possible for the deer herd to build up temporarily far beyond the sustained yield capacity of the range. By 1940-42 practically every curlleaf mountain-mahogany (*Cercocarpus ledifolius*), an abundant shrub, was highlined or hedged. At present both summer and winter ranges readily accessible to cattle are in a badly depleted condition. The summer range and parts of the winter range are seriously depleted of deer forage. In general the winter range is in better condition than the summer range in contrast to most other Utah deer-cattle units.

Deer Herd Population and Productivity

To determine deer population, several methods were employed including pellet group counts (*1, 4*), observations of changes in the sex and age classes created by disproportionate kills during hunts (*2, 3*), ratios between tagged and untagged fawns seen in late summer, strip censuses, and ground and plane counts of deer on the winter range. The winter ground and plane counts gave data on herd trends but were of limited value in determining total numbers. Pellet group counts gave the most consistent results, indicating 2,193, 2,713, and 2,224 deer for the years 1946 to 1948—12.7 pellet groups equal 1 deer day (*4*). The average January 1 population for 1946 and 1947 was calculated to be 2,233. The average hunting removal for 1947 and 1948 was 490 animals of which 58 percent were bucks (yearlings and older). The average net increase was estimated to be 500 a year or 22.4 percent of the herd. The net increase as spoken of here is the number of animals which could be harvested by hunters without changing the base January 1 herd number.

An average of 5.8 bucks and 4.2 does and fawns (10 in all) was harvested per square mile during the 1947 and 1948 seasons. The bucks were subjected to particularly heavy slaughter because of the accessibility of the area to hunters and the lack of dense escape cover. About 60 percent of the bucks present in the herd prior to the hunt, excluding male fawns, were killed by hunters. This percentage includes crippling loss of bucks which amounts to about 3.5 percent of those present prior to the hunt. Heavy cropping is manifested further in that about 60 percent of the bucks harvested are yearlings, and in the wide sex ratio of nearly 6 does per buck after the hunt despite an antlerless deer removal amounting to 71 percent of the buck removal. It was further determined that about 8 deer remain after the hunt for each buck legally harvested.

Crippling losses from gunshot wounds were estimated by two methods (*5*). The method using the ratio between viscera and dead deer found indicated a loss of 16 percent while the method using the ratio between dead deer found with a cropped ear and those found with uncropped ears indicated a loss of about 22 percent. The average crippling loss was thus about 19 percent of the legal kill. This agrees closely with other estimates in central Utah. It was also found that the number of unrecovered bucks was 6.1 percent of the legal buck removal; unrecovered does, 30.4 percent of the legal doe removal; and unrecovered fawns, 62.7 percent of the legal fawn removal. These percentages indicate willful leaving of does and fawns probably because of poor condition or inferior size, or because of illegal shooting by buck hunters. If crippling losses are taken into account, the net increase for the Oak Creek herd would be raised from 22.4 percent to about 26.6 percent.

Studies were also conducted to determine the extent of winter mortality in the herd. Two methods were used with remarkably close agreement. Strip surveys for dead deer were made and when related to the deer population showed a 7.2 percent winter loss. Another method (*6*), employing the overwinter changes in age classes of live deer resulting from disproportionate losses in the age classes, gave a loss of 6.9 percent. The average mortality for the two winters, using both methods, was about 7 percent. The buck loss amounted to 2.5 percent of their numbers at the start of winter whereas mortality was 4.1 percent for does and 11.9 percent for fawns. Malnutrition probably accounted for little or no loss because the winters were not severe and browse on the winter range appeared to be adequate in quality and quantity. The death of old and diseased animals, cripples that lingered on into the winter, and those that met with accidents or predation, apparently accounted for most of the loss.

Pregnancy records obtained for 78 mule deer does (long yearlings and older) in central Utah by employees of the Utah State Fish and Game Department, U. S. Forest Service, and U. S. Fish and Wildlife Service have revealed an average of 1.41 fetuses per doe of breeding age. If there had been no overwinter losses in the Oak Creek herd the does could have produced 1,645 fawns at this rate of fecundity. If no losses occurred throughout the year, such a rate would represent a potential herd increase of about 74 percent. Even allowing for a 4.1 percent overwinter doe loss there should have been 1,578 fawns dropped or a potential increase of about 71 percent. One might well wonder what the factors are that tend to reduce a potential herd increase of over 70 percent to an actual figure of only 22.4 percent. The greatest single loss appears to be in young fawns from the time they are dropped until they are 3 months of age. Observations of fawn carcasses encountered in the field indicate that

most of this mortality occurs before the fawns are a month old.

There were but 966 fawns remaining in the herd by September which, when compared to the potential 1,578, indicates a mortality of about 39 percent of the number dropped, thus reducing the potential increase of 71 percent to 43 percent.

Other herd losses mentioned above further reduce the numbers of harvestable deer to about one-third of the number of fawns actually born.

Grazing Patterns and Forage Preferences

Methods.—To determine forage volume and utilization, together with distribution of deer and cattle, line plot transects were run across the entire study unit. Transects were located by restricted random sampling on the average of 1 mile apart. Plots were similarly located at random along transect lines on the average of one every 4 chains. In September, volume weight and percentage utilization were estimated by species on 96-square-foot plots. Pellet groups and cow chips were counted on 1/100-acre plots to determine distribution and density of the animal population. Other signs such as tracks and the utilization of certain plants not within plots were also recorded, as well as type, steepness of slope, exposure, and accessibility of each area.

Numbers of deer pellet groups and cow chips were used as relative measures of range use. Deer apparently leave their droppings mainly where they feed and infrequently at bed grounds. Because cattle droppings appear to be more concentrated at bed grounds, summer utilization of grass on small transect plots was used as an indicator of cattle use. In major vegetal types and other larger units numbers of cow chips are believed to be a reliable indication of cattle use of the range.

Grazing patterns.—Evidence of cattle grazing was found on only 52 percent of the 790 plots on summer range, being especially heavy in canyon bottoms, swales, and on gentle slopes. Deer, however, used 92 percent of the summer range plots, avoiding only the ledges and barren areas. There was therefore about a 50 percent overlap in deer and cattle distribution on the area.

Table 1.—Deer and cattle sign in relation to steepness of slope

Location and type of sign	Slopes 0-25 percent	Slopes 25-50 percent	Slopes over 50 percent
	Number per acre		
Entire summer range			
Deer pellet groups	301	370	313
Cow chips	101	31	11
Oak-sage type			
Deer pellet groups	470	530	510
Cow chips	150	72	45

Steepness of slope has little effect on deer distribution. Deer sign is apparently proportional to the presence of desirable forage. Cattle distribution, however, is definitely limited by steepness of slope (Table 1). A statistical analysis of data for a single type (oak-sage) shows highly significant differences in cattle use due to slope, on the basis of grass utilization as well as number of cow chips.

There is a striking difference in the amount of use on the various vegetal types by deer and also by cattle as indicated by deer pellet group and cow chip counts on summer range (Fig. 1). Three types (oak-sage, conifer-shrub, and mountain shrub) show an average of over 400 deer pellet groups per acre while two (grass-sage and conifer) show less than 40. Four types (oak-sage, curlleaf mountain-mahogany, grass-sage, and mountain shrub) have an average of over 50 cow chips per acre while one (oak-mountain-mahogany-sage) averages only 10. These differences appear to be significant statistically.

On winter range, too, this difference in type preference is shown by deer pellet group counts. Of the major winter range types, juniper-bitterbrush-sage averaged 1,094 pellet groups per acre, the juniper-cliffrose-sage type 572, and the juniper-sage type 274. Sagebrush, a shrub common to all three types, was utilized 20, 13, and 8 percent, respectively, on the above types.

Since accessibility, exposure, and protective cover are rather uniform over this range the apparent reason for this wide difference in use by deer is the presence of the choice species, bitterbrush. However, deer distribution cannot always be explained on the basis of presence of desirable forage or physical factors of the habitat.

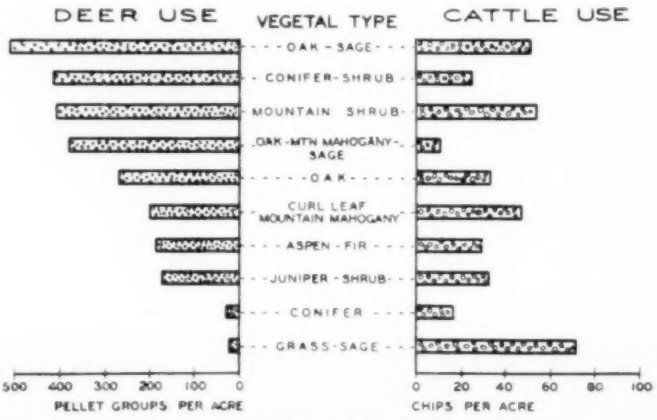

Fig. 1.—Relative deer and cattle use of different forage types on summer range, based on deer pellet groups and cow chip counts.

Perhaps the instinct to return to home range is important in establishing grazing patterns. The senior author has records of marked deer returning to the exact location on summer range for 3 to 7 consecutive years with a distance of 25 to 35 miles between summer and winter range.

This natural preference for certain types or areas often results in very uneven distribution of deer over the range and should be considered in figuring grazing capacity of deer-livestock ranges.

The exceptionally high use made of the juniper-bitterbrush-sage type of 86 deer days per acre (1,094 pellet groups at 12.7 per deer day) is noteworthy. Such use resulted in only moderate utilization of bitterbrush in 1948 and 1949 and indicates a very high carrying capacity for this type.

Contrary to much popular opinion deer and cattle often prefer the same areas where they are accessible to both. Deer, however, make use of range too steep or too far from water for cattle. Certain types which contain grass but little choice deer feed are used by cattle and not used, or used only very lightly, by deer. Generally good deer forage occurs on the more productive sites along with good cattle forage and such areas are grazed in common.

For the entire summer range the area grazed exclusively by deer averages 259 deer pellet groups per acre while range grazed by both cattle and deer averages 439 deer groups. This difference is highly significant statistically. Figure 1 shows that of the three types most highly preferred by deer two (oak-sage and mountain shrub) are also in the heavily used class for cattle. Certain types such as the oak-mountain-mahogany-sage and conifer-shrub are located in rough, steep areas and are less accessible to cattle but deer are able to utilize them. The grass-sage type favored by cattle is very small and supports very little desirable deer forage. The conifer type supports little forage and neither deer nor cattle make much use of it. The number of deer pellet groups found on this type was only 32 per acre for the summer season compared to 510 for the oak-sage type.

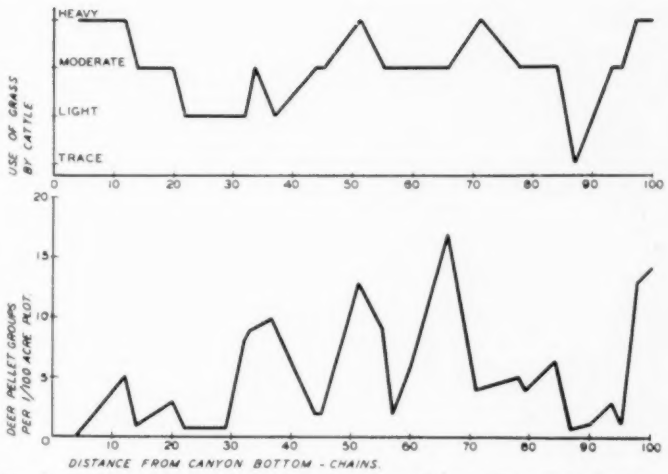

Fig. 2.—Utilization of grass by cattle and numbers of deer pellet groups along a transect from canyon bottom to top of divide.

That deer and cattle often prefer the same areas is further illustrated in Figure 2 which shows relative deer and cattle use from the canyon bottom to the ridgetop on a transect most of which is accessible to cattle as well as deer. Summer utilization of grass was used as a measure of cattle use because grass is choice summer forage for cattle but not for deer. In general, the areas used heavily by cattle were also used heavily by deer.

Forage preferences.—In forage preference studies of deer and cattle in Oak Creek, two things stand out plainly: (1) Grass is severely depleted on areas readily accessible to cattle but is ungrazed except for early spring use on areas accessible to and grazed by deer only; (2) curlleaf mountain-mahogany is hedged and highlined over the entire summer range.

Summer grass utilization is directly proportional to cattle sign as shown (Table 2) by average utilization figures for wheatgrass (*Agropyron spicatum*). Table 2 shows also that the volume of wheatgrass present is inversely proportional to cattle sign present. That grass has been depleted where heavy and severe evidence of cattle use occurs is indicated by abundant grass in protected areas on similar sites.

The same relation as shown for cattle and grass might also be expected for deer and one of their preferred species, such as curlleaf mountain-mahogany, were it not for the fact that deer cover the entire range in sufficient numbers to utilize fully all available forage of

TABLE 2.—AVAILABLE AMOUNT AND UTILIZATION OF WHEATGRASS IN RELATION TO CATTLE SIGN ON 1/100-ACRE PLOTS

Evidence of cattle	Available amount of wheatgrass	Average utilization
	Lbs. per acre	*Percent*
Light (No chips—cattle tracks present)	21.7	29.4
Moderate (1-2 chips per plot)	17.5	40.0
Heavy (3-5 chips per plot)	6.3	53.7
Severe (over 6 chips per plot)	0	Killed out
Plots accessible to and grazed by deer alone	38.8	3.2

the choice species. Because of past hedging and highlining of curlleaf mountain-mahogany the productive capacity of this species has been almost entirely destroyed on exclusive deer range as well as on range used by both deer and cattle. In the mountain-mahogany type where this species dominates the area its available growth now makes up only about 2 percent of the forage. In the oak-mountain-mahogany-sage type where mountain mahogany is one of the three dominant plants its available growth makes up only about 4 percent of the forage. Table 3 shows rather light utilization of this species at the time the data were recorded, but because of its high palatability in autumn and the small volume present deer will browse practically all available growth over the entire summer range before they move to winter range.

It is difficult to distinguish clearly between deer and cattle use on areas grazed by both. Table 3 shows average percentage utilization of the more important species on areas grazed by deer alone and on areas grazed by both deer and cattle. From this table deer forage preferences are evident and some differences in preferences of the two kinds of animals are indicated.

All important forbs and browse (except big sagebrush) supply summer deer forage as shown by data on exclusive deer range. Because of its abundance and fair palatability, oak supplies more summer deer forage than all other species combined. In general, it is browsed in direct proportion to the number of deer pellet groups counted. Although big sagebrush is a valuable deer forage in winter it is not eaten by either deer or cattle in summer.

On common use range most species show greater utilization than on exclusive deer range. Part of the reason is that deer use (judged from pellet count) was about 1.7 times greater on the common use range. Despite this difficulty, most of the grass and sedge utilization is clearly attributable to cattle. Forbs available during summer are not abundant and it is doubtful whether much summer grazing of them can be credited to cattle as judged from data in Table 3. However, both deer and cattle consume considerable quantities of the spring and early summer forbs not shown here.

TABLE 3.—AVAILABLE FORAGE, UTILIZATION BY DEER ALONE, AND UTILIZATION BY DEER AND CATTLE ON OAK CREEK SUMMER RANGE

Species	Deer use alone		Combined deer and cattle use	
	Available green weight	Average use	Available green weight	Average use
	Lbs. per acre	*Percent*	*Lbs. per acre*	*Percent*
Bluegrass (*Poa* spp.)	24.0	7.2	15.4	37.5
Wheatgrass (*Agropyron spicatum*)	38.8	3.2	20.0	32.8
Sedge (*Carex* spp.)	9.0	10.0	6.6	34.0
Aster (*Aster* spp.)	2.3	19.3	2.3	27.6
Lupine (*Lupinus* spp.)	0.3	23.5	10.6	15.6
Balsamroot (*Balsamorhiza sagittata*)	14.6	16.5	25.8	22.8
Oak (*Quercus gambeli*)	164.0	17.6	201.5	30.8
Big sagebrush (*Artemisia tridentata*)	92.7	0.6	180.8	0.4
Snowberry (*Symphoricarpos oreophilus*)	15.5	10.9	16.8	20.1
Curlleaf mountain-mahogany (*Cercocarpus ledifolius*)	9.3	10.8	4.6	21.4
True mountain-mahogany (*Cercocarpus montanus*)	0.7	54.4	3.4	53.6
Myrtle pachistima (*Pachistima myrsinites*)	2.3	10.3	2.2	24.3

Of the shrubs, true mountain-mahogany is highly preferred by both cattle and deer and, on individual plots, shows close browsing when either deer or cattle signs are plentiful. Some oak utilization can definitely be charged to cattle on areas readily accessible and is apparently proportional to the intensity of cattle grazing.

Heavier utilization on common use range than on exclusive deer range of curlleaf mountain-mahogany, snowberry, and myrtle pachistima may be due to greater numbers of deer present. However, cattle are known to browse these species on other areas in Utah where grass is scarce and use heavy. Utilization data on areas grazed exclusively by cattle would be very helpful in distinguishing cattle from deer use elsewhere, but such areas are not available at present.

Summary and Conclusions

The Oak Creek study area is a natural deer herd unit and range cattle allotment typical of many others in Utah. Cattle forage on accessible summer and winter range is badly depleted. An over-population of deer which reached a peak about 1940 seriously impaired the better deer forage on summer range and parts of the winter range. Cattle have been reduced to about one-third of their former numbers. Deer are believed to be somewhere near proper stocking for the winter range at present, but still exceed the supply of palatable forage on summer range.

The Oak Creek deer herd, estimated at about 2,233 head, shows a net yearly increase of 22.4 percent. The area has yielded an average of 10 deer per square mile during 1947 and 1948 without noticeably changing estimated basic herd numbers.

Crippling losses are computed to be about 19 percent of the legal removal. Of the unrecovered deer, losses of bucks are 6.1 percent, of does 30.4 percent, and fawns 62.7 percent of the legal removal for the respective classes. Winter mortality is estimated to be about 7 percent.

The potential increase for the Oak Creek herd is estimated to be 71 percent. A fawn mortality during the first 3 months amounting to about 39 percent of those dropped is the greatest factor which reduces the potential increase of 71 percent to a net increase of 22.4 percent. Most of this fawn loss is believed to occur before the fawns are 1 month old.

Cattle use about 52 percent and

deer about 92 percent of the Oak Creek summer range plots. Steepness of slope definitely limits cattle distribution but has little effect on deer.

There is a striking difference in the use of the various vegetal types by both deer and cattle. The variation in number of deer pellet groups per acre on the summer range is from 21 in the grass-sage type to 510 in the oak-sage type. This is estimated to be a variation from 1.7 to 42.5 deer days' use per acre. The variation in numbers of cattle chips per acre is from 10 in the oak-mountain-mahogany-sage type to 71 in the grass-sage type. Similar differences in use are noted between vegetal types on deer winter range.

Cattle and deer often prefer the same feed grounds. In general, areas heavily used by cattle were also heavily used by deer. Deer pellets were 1.7 times greater on common use range than on exclusive deer range.

On the Oak Creek summer range, cattle are responsible for serious grass depletion on the more accessible areas. Summer utilization of grass is directly proportional, and volume of grass present, inversely proportional, to cattle sign present.

Deer use considerable grass in the spring while it is very young and tender but practically none in the summer. Deer are entirely responsible for the serious depletion of forage production of curlleaf mountain-mahogany on about half of the area and have, no doubt, contributed to its depletion on the remainder of the area. A few species, such as true mountain-mahogany and some of the spring and early summer forbs, are highly preferred by both deer and cattle but they make up only a small percentage of the total forage used. Oak supplies more summer deer forage than all other species combined; it is also browsed considerably by cattle on the more heavily used areas.

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Society of Filipino Foresters

The first annual meeting of the Society of Filipino Foresters was held on February 9, 1949, and recently the first issue of *The Filipino Forester*, the official publication of that society was received in the SAF office. The issue contains the proceeding of the first annual meeting, held in Manila.

The following is taken from the foreword of the publication: "The Society of Filipino Foresters came into being out of a long felt need for a permanent 'happy meeting ground' wherein all the foresters in the Philippines — those in the government service and those in private enterprises—can bring into open discussion matters affecting forestry and through collective thinking and action help promote the healthy growth of Philippine forestry. Much was the desire and many were the attempts in the past to form one such organization but it was not until February 14, 1948 that realization of the desire came with the founding of the Society.

"The Society dedicates itself to the following: (a) To promote the science, standard, and practice of forestry in the Philippines; (b) To advance, represent, and protect the interest and standard of the profession of forestry; (c) To assist in the full development, wise use, and conservation of all forest lands, public or private, so as to assure our country a continuous and adequate supply of forest products and forest influences and other values therefrom; (d) To provide a medium of exchange of professional thought by means of a publication; (e) In general, to do everything and perform all other acts which are directly or indirectly necessary or incidental to, or in furtherance of the purposes of the Society."

Officers of the Society are Placido Dacanay, president; Eugenio de la Cruz, vice-president; Valentin Sajor, executive secretary; Evaristo Tabut, treasurer; and Tomas N. Roque, auditor. In addition the new society has a council of seven members. Nicolas P. Lansigan is chairman of a seven-man editorial board for the *Filipino Forester*.

Relative Capacity of Soils to Furnish Ions to Plants[1]

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ADJACENT AREAS of land show vegetation of entirely different species. Some plant species grow only on restricted areas while others are not selective. This refers to a possible restriction based not upon latitude or altitude but upon the availability of ions. Two important factors should be considered in a study of the intake of ions by plants—the species of plant and the quantity of ions available in the soil solution.

A large portion of Massachusetts soils are weathered from granite, sandstone, or limestone. Numerous plants found on soil weathered from limestone are not found on soil weathered from granite or sandstone. Many members of the Ericaceae family are found where granite has weathered, a lesser number of this family is found where sandstone has weathered, and comparatively few are found where the soil contains appreciable quantities of calcium. On the other hand, such plants as white pine, oak, hickory, birch, andropogon, and the annual goldenrod are relatively abundant on soils weathered from any one of the three types of parent material.

It would seem that the intake of ions by plants is, to a large degree, a criterion of the economic value of the soil.

New England soils are all relatively new as a result of glacial action. Consequently they are not poor soils if total nutrient elements are considered, but the availability of elements is relatively low. This is especially true of soils weathered from granite and sandstone.

This investigation was conducted to learn the relative capacity of some well-known soils of Massachusetts to furnish magnesium, calcium, and phosphorus to species of plants having differing capacities to secure the needed ions for their growth.

[1]Contribution No. 749 of the Massachusetts Agricultural Experiment Station.

Experimental Work

In the autumn, soon after most of the leaves had fallen, numerous twigs of the last annual growth were collected from the following perennials: white ash (*Fraxinus americana*), black birch (*Betula lenta*), hickory (*Carya glabra*), black oak (*Quercus velutina*), sumac (*Rhus typhina*), and *Andropogon scoparius* and one annual, goldenrod (*Solidago nemorales*). For *Andropogon scoparius* and *Solidago nemorales*, the whole plant was collected.

These seven species were collected from each of four different soil series: Gloucester soil, weathered from granite; Cheshire, from sandstone; Holyoke, from traprock; and Dover, from limestone. A brief description of these may be found by referring to soil reports (*4, 5, 6*). With the exception of Holyoke, these soils are economically valuable for farming in New England. Holyoke soil in Massachusetts because of the physical character of the overlying soil, is of little use for farming.

All the plants used were collected from areas where agricultural practices did not influence the results. Either the areas had never been farmed or a period of at least fifty years had elapsed since they had been used.

The samples of plant material were dried at 100° C, ground and mixed in preparation for determination of calcium, magnesium, and phosphorous content. Calcium was determined by precipitation with ammonium oxalate and back titration with potassium permanganate (*10*). Magnesium was precipitated with 8-hydroxyquinoline (*3*). Phosphorus was determined by the Sherman method (*8*), modified for plant materials.

Description of soils.—The Dover (*4*) soil from which the samples were taken was at the base of a mountain ledge near Great Barrington, Mass. The rock from which the soil was weathered is regarded as a dolomitic limestone, and to the adjacent areas it affords an apparently favorable medium for plant growth. The Dover soil series has a brown or reddish-brown topsoil. The development of these soils has resulted largely from the weathering of limestone in place, and to a lesser degree from the weathering of a thin glacial drift mantle over the lime stone. Loose fragments and outcrops of limestone are common.

The Gloucester soil was weathered from granite (*5*). It is the most common soil in the state and is found in many other parts of New England as well as in areas south of New England where glaciation has taken place. Much of the soil of this series is either steep or stony and on hillsides may be shallow. Where the topography is favorable, Gloucester soil is regarded as a valuable soil for hay and pasture. The soil is well drained and is mellow in texture. Where lime is applied it is known to lend itself to good crops, for the supply of potash and phosphorus is not too low. The location from which samples were taken is in Pelham, Mass.

The Cheshire soil from which plants were obtained is located on an area in Amherst, Mass., known as Mount Pleasant which is a typical drumlin of this glaciated area. The outcrop of the rock, triassic sandstone, from which this soil is weathered can be observed only in a few places in this immediate locality but is common southward. This soil has a brown mellow surface and can be readily penetrated by roots of plants (*5*). Near the area from which the plants were taken and on this same drumlin is an apple orchard. For about two decades it has been known that for good crop growth, applications of magnesium were required for the orchard.

Holyoke soil is derived from traprock produced by volcanic action over sand and sandstone.

Glacial action has mixed the soil derived from traprock with that derived from sandstone. There are some areas where no sandstone influence occurs. From such areas the plant samples were chosen. This traprock extends from near Amherst to New Haven, Conn. Holyoke soil is not used for agriculture in this area because of the steepness of its slopes, and the frequent shallowness of the soil. The plant samples for these determinations were taken from the top of a mountain near Amherst. Traprock soils in other parts of the world are frequently regarded as valuable.

Relative content of cations in soils.—The pH of the undisturbed Dover soil is about 6; Cheshire 4.5; Gloucester 4.5; and Holyoke 5.0.

Aside from the elements calcium and magnesium, traprock contains appreciable quantities of sodium and potassium. Granite also contains appreciable amounts of potassium and sodium, but the weathering involving their release is exceedingly slow.

The limestone from which Dover soil is derived is higher in calcium and magnesium but lower in potassium and sodium than are granite, triassic sandstone, or traprock.

The triassic sandstone of this area is extremely low in magnesium compared with sandstone of other areas and compared also with most other rocks of this area. Merrill (*3*) gives an account of a sample of a triassic sandstone of this region which contained but a trace of magnesium. Much of this trace of magnesium would be lost during the process of rock disintegration to soil.

Analytical Data

The calcium oxide, magnesium oxide, and phosphorus content of the plant tissues are shown in Table 1 along with the CaO/MgO ratios. From these data it can be seen that the highest average intake of both calcium and magnesium by the plants was from the Holyoke soil weathered from traprock; next highest in order for both calcium and magnesium intake was from Dover soil weathered from limestone; the third highest in magnesium was from Gloucester soil weathered from granite; and the lowest in magnesium were the plants grown on Cheshire soil weathered from triassic sandstone. In calcium content the plants grown on Cheshire soil were higher than those grown on Gloucester soil.

Although the plants grown on Cheshire soil were lowest in magnesium, the plants grown on Gloucester soil were only slightly higher, and could be characterized as low in magnesium. This is in accord with the work done in New Jersey for this type of soil (*1*).

Of individual plants the oak contained on the average more calcium and magnesium than any of the others, although sumac and hickory contained only slightly less calcium.

It has been observed by Wilde (*9*) that the amount of magnesium in soils is equal to from one-fifth to one-third the amount of calcium. It has been stated that when the percentage value of magnesium of apple leaves approaches less than 0.15, the point of deficiency is near (*2*).

The ratios of calcium oxide to magnesium oxide in plants are given in Table 1. The minimum ratio for the two elements (about 1.5) was found in andropogen grown on Dover soil. The maximum ratio was 7.06 for sumac grown on Cheshire soil. Sumac is more like a calciphile plant than any of the others of the group, and the plants grown on Cheshire soil had a lower average magnesium content than the plants grown on any of the other three soils.

If we assign 100 as the value of the average calcium oxide percentage content of plants grown on Cheshire soil, the comparative numerical value for the content of plants grown on Gloucester soil is 92; of plants grown on Dover soil, 107; of plants grown on Holyoke soil, 163.5. In the same manner, using 100 for the average percentage of magnesium oxide in plants grown on Cheshire soil, the value for the plants on the other soils become respectively 153, 218.7, and 316.2. Percentage intake of magnesium increases in proportion to the amount of magnesium salt present in the soil. On the other hand, although there is generally an increase in the percentage intake of calcium with an increase of calcium salt present, the proportionate increase is smaller than that of magnesium.

The percentage intake of phosphorus by all the plants grown on the four different soils showed little difference. Although sumac contained the highest average percentage of phosphorus and goldenrod the lowest, the difference was only about .05 percent. Dover and Gloucester soils afforded the highest percentage of phosphorus and Cheshire the lowest.

Discussion

Exchangeable calcium and total base exchange capacity of soils.

TABLE 1.—CALCIUM OXIDE, MAGNESIUM OXIDE, AND PHOSPHORUS CONTENT OF PLANT MATERIALS GROWN ON FOUR SOIL TYPES, WEATHERED FROM WIDELY DIFFERENT PARENT MATERIALS

Plant	Dover (limestone)				Gloucester (granite)				Holyoke (traprock)				Cheshire (triassic sandstone)			
	CaO percent	MgO percent	CaO MgO	P percent	CaO percent	MgO percent	CaO MgO	P percent	CaO percent	MgO percent	CaO MgO	P percent	CaO percent	MgO percent	CaO MgO	P percent
Birch	.52	.24	2.14	.084	.35	.10	3.35	.142	1.08	.46	2.31	.113	.34	.14	2.41	.092
Hickory	.65	.22	2.91	.100	.62	.23	2.76	.084	.92	.54	1.70	.098	.62	.14	4.50	.079
Ash	.53	.36	1.46	.123	.35	.14	2.53	.092	.71	.23	3.13	.088	.63	.15	4.33	.049
Andropogon	.21	.14	1.45	.166	.57	.18	3.06	.129	.86	.30	2.85	.082	.51	.14	3.55	.114
Oak	.71	.27	2.65	.144	.60	.28	2.11	.116	.92	.73	1.26	.071	.67	.12	5.69	.128
Sumac	.84	.22	3.87	.161	.44	.18	2.45	.166	1.16	.25	4.66	.118	.42	.06	7.03	.051
Goldenrod	.71	.45	1.56	.086	.64	.22	2.92	.042	.66	.24	2.79		.67	.13	5.25	.084
Average	.59	.27	2.29	.115	.51	.19	2.74	.110	.90	.39	2.67	.095	.55	.12	4.68	.084

The work of Lunt (6) reveals that the exchangeable calcium of the soils is approximately as follows: Gloucester 1; Cheshire 1.3; Holyoke 5.6; and Dover 21. The figures are in terms of milligrams equivalent per 100 grams of soil. He finds also that the total base exchange capacities for these soils at the same depth are approximately as follows: Gloucester 14; Cheshire 17; Holyoke 23; Dover 24. Thus is does not seem that these figures are correlated with the results that are recorded in Table 1 for the relative intake of calcium and magnesium, although the two high values and two low values do have a relationship and are in order of intake.

An examination of Table 1 poses the question as to why the plants grown on Holyoke soil took up from soil derived from traprock more calcium and more magnesium on the average than did the plants on Dover soil weathered from limestone even though the total base exchange capacity of the two soils is about the same and the exchangeable calcium is nearly four times as high for Dover soils as for Holyoke soils.

The only explanation which seems plausible to the author is the concept of antagonism. A pure calcium, magnesium, potassium, or sodium salt, if used singly as a nutrient medium, is toxic. If any two solutions are mixed, the one cation overcomes the toxicity of the other. The greater the number of useful cations in the nutrient solution, the more favorable is the condition for intake. Hence the intake of elements is greater from the Holyoke soil which has in the parent rock appreciable percentages of potassium and sodium in addition to calcium and magnesium, than it is from the Dover soil which has abundant calcium and magnesium but little potassium and sodium.

Finally, there are several reasons why some of the soils weathered from triassic sandstone are likely to be low in available magnesium: (a) On soils weathered from triassic sandstone in this area, magnesium deficiency has been observed as indicated by chlorosis and low rate of growth; (b) the rock from which the soil was weathered is low in magnesium; (c) workers in another state (*1*) have found that soils influenced by triassic sandstone are low in available magnesium; (d) the present study shows that plants growing on this type of soil were low in magnesium content.

Soils influenced by the flood plains of rivers would be exceptions. Thus Hadley soil and the margin of Agawam at the edge of the Connecticut River have not been referred to as exceedingly low in available magnesium.

Summary and Conclusions

The last annual growth of six perennials — ash (*Fraxinus americana*), birch (*Betula lenta*), hickory (*Carya glabra*), oak (*Quercus velutina*), sumac (*Rhus typhina*), a grass (*Andropogon scoparius*) — and one annual, goldenrod (*Solidago nemoralis*), were collected from each of four soil series. The soils were Dover, Holyoke, Gloucester, and Cheshire which were weathered respectively from limestone, traprock, granite, and triassic sandstone.

The average percentage intake of both calcium and magnesium was highest in the plants grown on the Holyoke series, followed by the plants grown on Dover soil. The lowest average percentage of calcium was found in the plants grown on Gloucester soil and the lowest percentage of magnesium was found in the plants grown on the Cheshire soil. The order of uptake of calcium and magnesium did not parallel the order of relative abundance of the element in the rocks from which the soils were weathered, nor the order of exchangeable calcium, nor the order of base exchange capacity of the soils. It is suggested that the greater intake of calcium and magnesium by plants on soils derived from traprock may be due to antagonism.

The Gloucester and Cheshire forest soils are lower in pH than forest soils of the Holyoke and Dover series. Plants grown on Dover and Gloucester soils had the highest percentage intake of phosphorus. Those grown on Holyoke soils came next in order and the lowest intake of this element was from Cheshire soil.

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Forest Wildlife Management in the Rocky Mountain Region[1]

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THIS DISCUSSION is concerned primarily with the forests and wildlands of the mountain area of Colorado, the eastern slope forests of Wyoming, and the Black Hills of South Dakota. Here, if foresters follow the Society of American Foresters' policy of multiple use, we may expect to find wildlife management practiced as an integral part of land management.

It may seem paradoxical to question management policies in a forest region where deer, elk, moose, mountain sheep, grizzly and black bears, turkeys, and several species of small game are hunted legally; where two big game hunters out of three are successful; where two deer may be taken on a license; where fishing is fair to good; and where many of the original furbearers are present in harvestable numbers. This speaks well for fifty years of management. Offhand, it looks as if we need only carry on "as is."

In addition to wildlife, the forests of the region have furnished sizeable quantites of timber products, range for thousands of sheep and cattle, water supplies for cities and irrigated farms, and scenery and outdoor recreation for many people. Here, five major uses have contributed substantially to human welfare.

Nevertheless, it is the purpose of this paper to take a fresh look at the multiple use philosophy as applied to forest lands, to call attention to some errors that have occurred, to see whether past yields can be sustained, to determine whether past success resulted from planning or luck, and to suggest some needed changes in thinking that may bring quality and durability to future forest wildlife management.

Land Ownership

The term "forest" is used in a broad way to include those wild lands that encompass the foothill brush lands and pinon-juniper types; the ponderosa pine-Douglas-fir slopes; intermediate zones of lodgepole pine and aspen; the spruce-fir belt; treeless alpine peaks; the parks, meadows, and old burns with which the whole is interspersed; and the water it supports. For this is the home of forest wildlife.

About half of it is administered by the U. S. Forest Service, about one-quarter by other federal agencies (principally the Bureau of Land Management and the National Park Service), and most of the rest by private owners. States and municipalities administer some two percent.

The private lands will have to be dismissed with little comment; not that they lack importance, for they are frequently the better lands within the region. Often they control access to public lands behind them. Held for various purposes such as timber production, range, or recreation, their contribution to wildlife is usually ignored in the owner's plan of management. Dual use is common, but not multiple use to the extent that wildlife management is purposeful. Occasionally the owner profits by control of hunting rights, but many lands are posted. With no incentive for production, the land owner sees game (and the hunters who pursue it) more often as a nuisance than an asset. How to provide that incentive is a major problem; without it there is little hope for any positive wildlife management on private lands. So this problem will be passed without further comment only because it is a subject too big for this paper.

Significantly, the state game departments own and control only minute portions of the forest wildlife habitat. The game commissions govern the actions of people but they have no direct control over the habitats that provide, or may fail to provide, the essentials of food, water, and cover. So there is little land dedicated to wildlife production by the agency charged with its protection, propagation, and management. Would it not be better if they had more forest land on which to develop and demonstrate the possibility of correlating land use? Unfortunately, the Hastings report (2) of forest administration in the State of Colorado, of which the Society of American Foresters was co-sponsor, barely mentions wildlife as a state land asset. State lands there are, but they are administered primarily for revenue by state land boards. It is evident that the dependence of game upon the land is little appreciated by those who make the laws under which state agencies operate.

National park management, while primarily for recreation, is multiple use in a social sense, if not economic. Even though hunting is prohibited, these areas that offer relatively undisturbed wildlife conditions will be used more and more by wildlife managers as a base for judging accomplishment elsewhere.

Lands administered by the Bureau of Land Management form the key to many big-game ranges. These are the foothill brush lands where large deer populations winter. Here dual use management is practiced under a livestock advisory board system, the effectiveness of which it may now be too early to appraise. The allocation of proportioned amounts of forage to game and to livestock is commendable, its success depending upon the level of stability reached in range production. Because these lands are generally below the zone of high precipitation, watershed problems are more closely related to soil erosion than to water supply.

This leaves the national forests whereon a system of multiple use has long been in operation. Five major uses have been recognized; others have been zoned out of Forest Service administration. Always subject to the mining laws, much

[1] Presented at a meeting of the Division of Forest Wildlife Management, Society of American Foresters, Seattle, Wash., October 12, 1949.

mineral land has been appropriated to private exploitation. In 1906 the Forest Homestead Act led to the segregation of many of the more productive lands that were considered to be best suited to "agricultural pursuits." Various other self-imposed Service zoning activities have followed, such as campgrounds, summer homes, primitive areas, roadside strips, municipal watersheds, and wildlife areas.

Land Uses and Values

Forest Service operations on a multiple use basis over the past fifty years have, on the whole, been fairly successful. The question is whether the same degree of success can be expected in the future. Under light or moderate pressure the use of forest resources on a multiple use basis is relatively simple. The forests have been reasonably productive of wildlife. If the future appeared as bright as the past, there would be no purpose to this paper.

This may be a good place to emphasize the importance of clear thinking. What we are doing now may be less important than what we are thinking for the future. Some of the potential conflicts that follow are of no immediate concern. Physical limitations of terrain, undeveloped techniques, and high costs may make immediate application impossible. Nevertheless, if these are the reasons for lack of application, the wildlife manager has much to do because it may be only a short time until economic methods are worked out. For example, the eradication of "brush" and subsequent reseeding with grasses could seriously affect big game winter ranges. Actually, the best game ranges are so steep and rocky that present methods and equipment make the job prohibitive. But the development of the helicopter, the bulldozer, 2,4-D, DDT, Compound 1080, and similar products opens the door to many things that once seemed impossible. And financing can reach unexpected levels as the current and planned activities in flood control, irrigation, and power development now witness. So, the only permanent safeguards to the wildlife interests must come from public appreciation of the need for sane and balanced programs. We cannot depend upon temporary controls as substitutes for sound policy if we are to fulfill our responsibilities in the only way that can be lasting.

So far, there has been little conflict with timber management. Accessible stands have supported timber operations beginning prior to the creation of the national forests, but thousands of acres, because of immaturity or inaccessibility, remain untouched. Logging road and skid trail erosion have caused some damage. Tree planting policies that might be detrimental in converting parks, brush lands, and aspen stands to conifers have not materialized largely because of financial and physical limitations to the program. Fortunately, insect control jobs with the newer potent insecticides have followed rules to safeguard wildlife. On the positive side, opportunities to incorporate beneficial wildlife practices into timber management activities will increase as more is learned of habitat requirements and deficiencies, and the interrelationships inherent between these two resources.

Recreation conflicts have been minor. The recreational aspects of hunting and fishing are so important as to lead naturally toward coordination.

Water use brings definite conflicts. We are situated in an area where low precipitation characterizes the foothills and plains. Without mountain water the existing economy would fail. Under state laws, national forest waters are subject to appropriation, as are any others. First private and municipal enterprise, and now Bureau of Reclamation projects, impound or divert water for municipal use, irrigation, and power. The problems of flooding game range, lowering minimum streamflows, fluctuating reservoir levels, and channel scouring are too well known to need elaboration; and, although attempts are being made to alleviate or offset water-use damages, the problem will become more serious as engineering programs expand.

Watershed values have always been highly regarded in the national forests of this region, but watershed management as a science is only now developing. That vegetation influences streamflow is well known, and it is only logical that watershed managers are thinking in terms of cover type manipulation. For example, there are indications that shrub and aspen stands transpire more water than does equally protective grass cover. No doubt conversion can be accomplished with measurable results in water yield, but the effects on wildlife should be considered. Can we afford to sacrifice all the wildlife values of shrub and aspen cover for a small percentage increase of streamflow? Carried to extremes, the results would be disastrous. Recognition must be given to a balance between use of water at its source and downstream.

The grazing of forest range was established custom prior to its reservation. That the Forest Service has been over optimistic in its appraisal of permanent carrying capacity is evident. After fifty years of management, light to heavy reductions over considerable portions of the range are found necessary. Primarily, this results from failure on the part of users and administrators to see the changes that occur *gradually* in soils and vegetation. Fires and timber cutting result in immediate and conspicuous changes; but the year-after-year selection by sheep and cattle of first one group of palatable plants and then their less palatable successors was not so obvious. In the final stages of excessive use annual weeds and bare soil remain. Accompanying these cover changes are compaction, loss of litter, and poor soil structure. Water runs off the surface instead of being absorbed. Floods and erosion follow. Fifty years of logging have actually influenced only a small percentage area compared with three to seven months selective consumption of vegetation by grazing animals annually. During certain stages big game has benefited by shrub encroachment, but with continued heavy grazing the palatable

browse plants go out. Overgrazing can become the most serious obstacle to wildlife management; yet livestock and wildlife are not necessarily incompatible.

Because he deals with comparable forces, the wildlife manager should profit by the experiences of the range manager. We have sad examples now, particularly in the foothill brush lands, of failure to recognize game influence on plant succession, and failure to make sufficient reductions when the signs were seen. The winter range of half of our big game animals is over utilized and on a downward trend. Right now we are over capitalized. Excessive game use is close to livestock use and fire in its influence on vegetation—slower than fire, but just as certain.

Those who consider grazing as a tool in fire control to reduce herbaceous fuel accumulation would do well to consider plant succession. The highly inflammable stands of low palatability cheatgrass that have taken over bare soils, resulting in part from overgrazing, constitute a real threat to the survival of browse and cover plants on our winter game ranges. Instead of reduction, the fire danger is materially increased, and periodic burns will make conditions worse.

Because this region has unusually varied pressures that make multiple use on forest lands an absolute necessity, we are particularly sensitive to trends toward specialization. Coupled with this, we deal with steep slopes; shallow, easily erodible soils; low total precipitation, recurrent droughts, and occasional rains of great intensity; slow growth; and an extremely delicate biological balance. Our mistakes are not easily or quickly remedied. Some of us are learning that we can do better by working with natural principles than against them. Perhaps we are developing Aldo Leopold's "ecological conscience" (*3*).

And this leads to a concluding thought that should concern all of us. Much has been written lately about forest, range, and soil depletion, and the need for resource conservation.

What Is the Goal?

Graham (*1*) summarizing the Thirteenth North American Wildlife Conference, said: "Conservation is not just something it would be nice to have. It is not just something that would make life a little more pleasant and perhaps a bit more profitable. Conservation is a matter of life or death." Then, calling attention to human population increases and the existing deficit from the 2.5 acres of good land necessary to keep one person properly fed, he concluded with this paragraph: "There is no time for indecision and feeble effort. This is a time for level-headed, analytical appraisal and constant, constructive, even if slow, progress toward a determined goal—careful husbandry of the land and frugal use of all the natural resources we possess. This may be hard on wildlife. It means that on most land wildlife must remain a by-product. But there is no alternative. The goal is the survival of man."

It is this last sentence that disturbs me. Without question, we need conservation, but there are limits to what the best management practices can provide. The land has definite capabilities—*and limitations*. So, there must be population limits. Is the goal implied really the survival of man, or the uncontrolled increase of man to the point that all land is put to the production of just the bare essentials? If the latter, what is the end result to be?

A sample of thinking with respect to population trends is the recent broadcast of a Harvard University professor, Eugene G. Rochnow (*4*): "A population for the United States of about 1,000,000,000 people could be fed, and a world population of 15,000,000,000 would not seem unreasonable, if proper conservation and full use of available resources were developed. . . . The only way to feed the billions will be to use the world's trees for feeding people instead of using wood for houses and other building purposes. . . . There would be no meats, and other sources of protein would be necessary. It seems certain that meat and eggs as a source of protein will gradually vanish, for a beef steer converts only about 12 percent of its food to meat. It seems much more sensible to feed the plant proteins to people directly, as the British have found in the last decade. . . ."

This is quite expressive of current thinking. If this trend is followed, the standards of living of future Americans will certainly be far different than we now enjoy. Obviously, wildlife will have no place in that economy for, in terms of human necessity, wildlife is a luxury; it is something nice to have if it interferes not too greatly with the supplying of basic needs. It furnishes some food and fiber, to be sure, but not efficiently.

The loss of wildlife might not be so serious, but what assurance, or even hope, is there that the human population curve will reach its peak prior to other resource exhaustion? Many historical examples point to the contrary. Or, what reason is there to believe that the curve will cease to rise when the last acre is put to food production?

It seems queer that man can recognize limits to the plants and animals he fosters, yet exercises so little concern about his own expansion. Contrary as it may be to some religious teachings, to short-range economic planning, to politics, and perhaps sociology, the biologist should make better known the biological relationships that surely govern man as well as beast.

Admittedly, these thoughts are directed considerably into the future; but it is going to take a long time and a lot of education to overcome some of the obstacles to a sensible approach. Perhaps this is out of the realm of forest wildlife, but who should have a better understanding of the basic principles than the wildlife biologist, and who has a better perspective for the long-time job than the forester?

Following this thought, the forest-wildlife manager might make no better contribution than to point out in terms of human welfare the need for conservative management on a truly multiple use basis. There is ample room for

habitat management, for stream improvements, for food and cover planting, but in the background should be the underlying goal of conservative use for a total of all values in the long run.

In summary, it seems to me, we need: (1) To distinguish between what is sustained yield and what is exploitation; (2) to recognize that multiple use will seldom yield the maximum of any single service—rather a maximum of total values; (3) to operate with a reasonable margin of safety anticipating recurrent catastrophes of weather; (4) to appreciate that management which diverges least from the natural is most likely to succeed ultimately and at the least expense; (5) to recognize that land has certain capabilities and limitations; and, (6) to recognize that human problems are inseparable from land and water, and from plants and animals.

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Forest Service Work in New England and a Look Ahead[1]

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THE HISTORY of national forest work in New England is pretty much the history of the national forests in the eastern United States. Under the Weeks Law, enacted March 1, 1911, most of the national forest land in New England has been acquired. Within a few months after the passage of the Weeks Law, work was under way to acquire areas in the White Mountains and to incorporate them into the White Mountain National Forest. This early start was the result of strong pressure from many groups who even then were very much in love with this section of our country.

This acquisition program has continued throughout the years, and today we have a White Mountain National Forest comprising about 715,000 acres.

In 1928 the Congress of the United States, again in response to an insistent demand on the part of the people of Vermont, authorized the establishment of the Green Mountain National Forest. Although acquisition funds have been scarce, especially since shortly before the war, acquisition work has been going forward steadily and today the Green Mountain National Forest contains approximately 210,000 acres.

[1] Presented at a meeting of the New England Section, Society of American Foresters, February 24, 1950.

These two national forests, together with two experimental forests in Maine and Massachusetts, total slightly under 940,000 acres. Of this total, 586,000 acres are classed as commercial forest land.

The national forest contributions to social and economic life in the Northeast are many and varied. Last year timber sales amounted to $220,000. They contribute to recreation—hunting, fishing, camping, hiking, and just plain looking. These values cannot readily be expressed in dollars, but is that necessary? More and more, we are beginning to realize the tremendous value of these forests for the storage and control of water. Again, expressing these values in terms of money is meaningless. Nevertheless, these values are very real. They are practically priceless.

And let us not overlook the inspirational value of the forests. To me these values rank with the highest.

Forest research in the Northeast has grown up from infancy in the past 50 years. Early research, carried out mostly by schools such as Yale and Harvard, was concentrated on white pine in the southern part of New England.

The U. S. Forest Service established the Northeastern Forest Experiment Station in 1923, locating it at Amherst, Mass. This station concentrated its research effort on the spruce-fir forests of northern New England, thus enlarging our study of the forests. The problem was to find ways to regenerate areas where the pulp and paper companies, the principal users of the forests, had harvested pulpwood; and to work out cutting methods that would increase yields of pulpwood. Yield tables for predicting the timber growth on cut-over lands also were developed.

Fresh impetus was given to federal forestry research in New England in 1928, when the McSweeney-McNary Forest Research act was passed. This act clearly recognized a federal responsibility for forest research. Besides greatly broadening the field, it authorized federal research agencies to cooperate with individuals and state and private agencies. This not only encouraged cooperative research; it also laid the foundation for the great amount of research that is carried on today through cooperation among federal, state, and private agencies.

The federal forest research effort in the Northeast has gone forward generally, though the increase has been by spurts and spasms. In the last 10 years it has grown rapidly.

As conditions have changed, research emphasis necessarily has shifted from one line of research to another. The importance of

watershed management for instance, has been driven home to the people of the region in recent years, and regard for this colors much of our present research activity. The need for better cutting practices and the problem of improving and utilizing hardwood forests also have bubbled up to the top of the kettle.

They are only a few of the research studies that claim our attention. It is impossible even to merely list them all. Whole new areas of research have opened up in New England: flood control and watershed management, forest surveys, forest economics investigations, and forest utilization. These are not distinct fields of work separated from each other by neat fences. They overlap. They are all interrelated.

To make a sustained and coordinated attack on these forest problems over a broad front, all these research activities—in silviculture, pathology, entomology, fire protection, genetics, mensuration, utilization, economics, taxation, insurance, and the others—must be integrated and coordinated.

This integrated effort is not limited to the research of the Forest Service; it embraces cooperating agencies as well. Much of the research work of the experiment station in New England—especially in forest management and closely related fields—is carried out by three research centers which the Northeastern Forest Experiment Station has established, in cooperation with local industries, local schools, and local people. The problem areas of these research centers are determined largely by economic and ecological considerations. For example, the Northeastern Station's Penobscot Center at Bangor, Maine is concerned with the problems of the spruce region. The White Pine Center in Alfred, Maine deals with white pine problems of the region. The Northern Hardwoods Center at Laconia, N. H. deals mainly with the northern hardwood problems of New England. Each of these has at least one experimental forest where its work is largely concentrated.

Any forest research is complicated by forest pests. In studying these problems, silviculturists join forces with entomologists and pathologists in other state and federal agricultural bureaus. A good example is the spruce budworm, which in the last few years has been epidemic in Canada and northern Maine. White pine weevil, rots of balsam fir, heart rots of northern hardwoods, beech scale and nectria, and the birch "dieback" are some of the other pest problems that are being studied in collaboration with other agencies.

The history of the cooperative action work of the Forest Service in New England is much the same as the history of the state forestry agencies in this section of the country. The best known of the cooperative programs is the joint work in fire protection. Many of the New England states had made some beginnings in fire protection early in the century. By 1912 five of them had qualified for federal aid under the Weeks law. By 1920 nearly 22 million acres were under organized protection, of varying degrees of intensity.

The work in fire protection was greatly expanded through the Clarke-McNary law passed in 1924. Since that time the program has advanced steadily and surely, until today when every acre of forest land in New England is under intensive protection. The cost, too, has advanced materially—as could be expected. In 1916-1920 the average annual cost was $205,000. During the last three years the average annual cost was $1,300,000. The significant feature of this latter figure is that two-thirds of the cost is being borne by the states—only one-third by the federal government.

A second important cooperative program of the Forest Service is the extending of technical advice and assistance to woodland owners in the field of forest management under the Norris-Doxey law. The Norris-Doxey law was enacted in 1937, and the state foresters and extension foresters of New England were quick to see its advantages. As a result, the program grew faster than in any other section of the country. Vermont was the first state to achieve 100 percent coverage. Today there are 27 farm foresters working in New England. In 1949 this work in New England cost $134,000, $80,000 of which was put up by the cooperating states.

As we look over the accomplishments in New England during the past 50 years, we have a right to be proud. Forestry has come a long way. But, while we can be proud, let's not be complacent. We don't have too much to be complacent about.

I can never be complacent about out national forest acquisition program, until those large interior private holdings not presently in the most desirable ownership are incorporated into the Green Mountain National Forest. On a smaller scale, the White Mountain National Forest also could stand some substantial blocking-in.

Although we have made much progress in our research programs, much more needs to be done. We can't be complacent in research. Probably the most hopeful sign in this field is the demonstrated willingness and ability of all research men to coordinate their work so as to prevent duplication. So many things remain to be done and the resources for doing them are so small that here above all else can we ill afford to have duplication of effort. I believe that we individually and as a profession have a real responsibility to help the research men bring their needs more forcefully to the attention of our governing bodies, both state and federal.

Much progress also has been made in fire protection, but here, also, there is little room for complacency. Last year the Clarke-McNary law was amended to provide considerable increases in funds available for fire protection. There is little doubt that the states will match these increases. However, more money in itself never will cure anything. With more money comes more responsibility and a greater necessity for us to account for our stewardship. As a profession we should take a cold look at our plans and organizations

for fire protection to determine whether some changes are in order.

Above all, we cannot be complacent in the sphere of cutting practices. It is here that we as a profession come nearer to failure than in any other phase of our work. Although we can rationalize, alibi, and explain, the plain fact still remains that privately owned forest land in New England is not in as good shape today as it was 50 years ago. Last year an attempt was made to increase materially the facilities for extending our efforts in the field of giving management advice and assistance to private forest landowners. It failed. Another attempt is being made this year. Its fate is uncertain.

I am more than ever convinced that education and assistance alone will not solve our problem. I am more than ever convinced that we need some sort of public controls of the cutting practices on privately owned land. I have seen some cutting in the West and in the East that convince me this is a necessity.

I know that many of you do not agree with me in this respect, and I assure you that I have no desire or intention to debate the issue at this time. I am, however, reminded of a very significant statement made by a New England forester last fall. He said that it was too late for public controls of cutting practices in New England — too much of the land already had been cut over improperly.

Debate over such a fundamental thing as public controls is a healthy thing — eventually we shall come up with something agreeable to the most of us. But let's not spend too much time on such debates. Instead, let's concentrate on that part of our program on which there is broad agreement. We all have a field of common interest that needs a lot of our attention. We are interested in better management of our national forests; in intensified protection of public and private forest lands from fire, insects, and disease; in better cutting practices on our privately owned land; in an expanded and intensified program of research.

We must intensify work on two problems which to me are the most challenging ones facing the forestry profession in the Northeast and, for that matter, in the whole East.

The first of these is "What to do with our low grade, second-growth hardwoods?" Even though we have 100 percent fire protection; even though we have universally accepted improved cutting practices — we still are not going to get on top of our job until we squarely face and solve that question, "What to do with the low grade hardwoods?" I am not unmindful of the work the research people have done in this field. I am familiar with the work in converting this material to pulp, to charcoal, to chips for soil improvement. But the surface barely has been scratched.

The second challenging problem facing us as a profession is "How to handle our forest lands for the best management of our water resources?" Most of our public lands were purchased primarily because of their watershed values. We have a real job ahead in this field. Both administration and research must join hands in an intensive effort to learn more about this subject.

So I repeat: let's not spend too much time debating procedures. Let's spend more time getting to work on programs on which we agree. Let's put a considerable portion of that time on the two most important problems: utilizing our low grade hardwoods; and water management.

As I consider the points I have tried to make, mixed emotions come to me — some hope, some gloom. There is enough hope to keep us from becoming discouraged; enough gloom to keep us from becoming complacent.

I can sum up my feelings with one short statement. In spite of the fact that we have come a long way, we still have a long ways to go. Let's be on our way.

New Developments in the Forest Products Industries

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THE INVENTION and processing of new forest products to the phase of successful commercial development is usually adequately reported by trade and technical journals for those individuals particularly interested in such products. This paper is limited to a discussion of the growth and significance in the integration of forest products industries. All the diverse interests of the members of this Society should blend in a desire to see the highest value return and the most complete use made of wood resources regardless of their available physical form and characteristics.

Integration is primarily a mathematical term that has been frequently applied in writings concerning various phases of the lumber industry. It has come to represent an Utopian viewpoint as ordinarily used, and infers an ideal, complete utilization, or method of harvesting and processing, depending on the subject under consideration. It implies not only complete utilization, but also highest value utilization accomplished in accordance with recognized standards of forest management and methods of harvesting the timber crop. This means that interest in integrated forest industry is not confined to the industrial utilization forester, but that it embraces the field of the logging engineer and the management forester together with the many subfields of endeavor related to woods forestry.

Unfortunately, and yet naturally, the need for consideration of integrating forest industries does not generally occur until depletion of available resources forces a sober accounting of the future as it relates to supply, existing manufacturing capacities, and investments. The cold shock of realization that timber supply is not limitless and that future profitable operating years can be counted, is the most important single factor in vitalizing the promotion of integrated utilization.

Historically speaking, integration of forest industries usually begins in earnest in the operations of large companies. Such developments require that the company own or have access to a volume of timber that will potentially support operations over a long span of years and permit new investments to be written off. It requires research and development work that must be privately financed, market studies that are beyond the monetary means of the small operator, capital for new plant outlay, an adequate marketing organization, and, above all, imaginative leadership.

Single Company Integration

Examples of the development of such single organization integration of manufacturing industries are becoming fairly common in the various timbered regions of the country and have served in many instances as precursors to the community level of integration which is so vital to the future of the lumber industry.

In the Pacific Northwest, the Weyerhaeuser Timber Company at Longview, Wash., represents one of the most diversified operations to be found anywhere. A detailed description of this operation (*6*), points out that within the confines of a single operation three sawmills, two pulpmills, a plywood plant, bark reduction plant, wood briquette plant, planing mill, and an experimental fiber plant are all operated with interdependency on the same source of raw material. This diversity permits nearly ideal use of timber by species, size, and quality and virtually eliminates so-called "waste." The company has also given consideration to the changing size and quality of available timber in planning, and believes that integrated operation will function fully as well with smaller second growth timber as with old growth of large size.

In the South, the operations of the Crossett Lumber Company (*2*) exemplify integration. Two sawmills cutting softwoods and hardwoods, a pulpmill that consumes pine that is below sawlog standards, a distillation plant based on low quality hardwood as a raw material, a preservative treating plant, and a factory that utilizes small clear cuttings are the basis for a complete utilization program.

Community Integration

At Cloquet, Minn., (*3*), a very well known example of community level integration of forest products industries has served for many years to inspire better utilization practice throughout the Lake States. Under three separate ownerships two sawmills, a pulp and paper mill, a wall board and blanket insulation plant, a box factory, and a specialty remanufacturing plant are operated to make maximum use of the available wood material. Proper selection of industries results in utilizing the leftover material from certain plants in this community as raw material for other units in the area. Utilization in this instance is so complete that the manufacturing plants are not able to supply the local demand for mill fuel wood.

As previously noted it is generally necessary for the larger concerns to lead the way, but the development of such integration on a community level, as at Cloquet, associating the efforts of two or more individual investors is of equal significance. The efforts of various wood working plants and log reducing factories in the vicinity of Spokane, Wash. are illustrative of the value of coordinated effort. The objective of this group is to integrate wood-using industries by bringing in new types of converting plants, and to solve the problem of profitably marketing the in-

[1] Presented at the annual meeting, Society of American Foresters, Seattle, Wash., October 13, 1949.

evitable volume of material that is accumulated as refuse typical of certain methods of wood processing. Enterprising manufacturers in several fields of endeavor have banded together in this city to form a non-profit organization known as Inland Empire Industrial Research, Incorporated. In accordance with the manifold objectives of this organization it functions to initiate and conduct research in any field that will further industrial development in the area, to serve as a clearing house of available factual information, and to assist in applying the results of research by developing new products and establishing new industries. In the field of the lumber industry, the greatest effort has been directed towards improving wood utilization.

The first step in this direction was to determine the problem that existed. It was found that nearly all of the 30-odd wood-using plants within a 10-mile radius of Spokane were operating independent fuel sales and distribution systems, and, lacking suitable storage facilities, many of these companies were burning much of their refuse during the summer months. This led to instability in the fuel market and a fluctuation in employment and in equipment use in accordance with season of the year. To solve this problem, a separate corporation was organized with ownership vested in several individuals. This corporation, the Lumber By-Products Company, contracts to take all the refuse from the wood working plants in the Spokane area at an agreed scale of prices. In 1948 this amounted to a total of 200,000 cords distributed as follows:

6,500 cords of green slabs
10,000 cords of dry planer blocks
3,000 cords of match blocks
30,000 cords of green hog fuel
8,000 cords of green sawdust
3,000 cords of dry resaw dust
140,000 cords of shavings

Lumber By-Products Company has facilities to segregate and store this material during the summer months. With this assured supply the company has been able to make fuel contracts with large industrial firms in the vicinity and other big volume users of wood fuel in various forms.

Since utilization as fuel in its original physical form does not represent the highest potential financial return, continous efforts are made to improve and diversify the methods of disposal of this raw material. Following extensive laboratory research and testing, a 40-ton per day wood flour mill was erected and put into operation in 1948. This mill, which has several new efficient applications of principles in reducing waste to wood flour, has operated to capacity ever since it was built. Western white pine is used exclusively since this species makes the highest quality wood flour in the world. It has been necessary to import white pines shavings from plants in British Columbia and nearby points to maintain production in the plant.

Resaw sawdust, segregated at the manufacturing plants, is collected and sold to local plants to be used in the manufacture of floor sweeping compounds and although it represents a small volume usage is nevertheless one of the increased value examples that are sought by this organization.

The Lumber By-Products Company also fostered the idea of locating a Pres-to-log manufacturing unit in Spokane, and assisted in building a plant to produce this type of fuel adjoining the property of one of the member companies. This plant is independently owned and in 1948, 7,000 tons of Pres-to-logs and stoker fuel briquettes were manufactured by this concern.

The research organization and Lumber By-Products Company have thoroughly investigated the possibilities of establishing some type of a fiber board plant to increase the value of mill leftovers in the Spokane area. Much of the needed capital for such a venture has already been subscribed, but no decision will be made to invest it until the investigators conclude that such a venture will be profitable. Other currently active research studies include the possibilities of wood carbonization, mixed wood fiber and gypsum boards, and alcohol production by various proposed methods. Some preliminary work has been carried out with one machinery manufacturer in connection with the development of portable wood chippers to increase utilization in the woods operations.

The Grays Harbor area in the State of Washington has long been noted as a lumber manufacturing center. From 1900 to 1929, when the lumber industry in the state was at its height, this area was noted for the export of large high grade "Jap-squares" to the Asiatic trade. Such timbers were cut from logs from old-growth Douglas-fir forests, required heavy milling equipment with a minimum of remanufacturing and finishing facilities, and represented a minimum return in man hours of labor per thousand board feet in processing. It was inevitable that export business of this type would make heavy inroads upon the virgin Douglas-fir forests tributary to this manufacturing area. It was frequently predicted that Grays Harbor would become the most famous of all ghost town areas when this virgin timber was exhausted. The crowning blow to the continuation of the forest industries on a large scale came with the establishment of the Olympic National Park in 1938 which immediately removed a great deal of timber from the potential resource serving this area.

During the depression years, the population of Grays Harbor area declined while the forest products industries although greatly decreased in volume of timber processed, showed some expansion in the form of diversification. The loss of offshore markets was partly offset by the growth in the plywood industry and development of the pulp industry to form a sound base for integration. Another important factor in the changing economy of this forest community was the virtual exhaustion of the old growth Douglas-fir stands which left for future exploitation virtually pure stands of hemlock and silver fir.

Recognition of these changing circumstances has caused the peo-

ple of the Grays Harbor region to take several important steps to perpetuate their industries and support the population. They are maintaining a constant fight to reduce the boundaries of the Olympic National Park and thereby increase their forest resources. They are planning for the establishment of a cooperative sustained yield unit to serve this manufacturing center and are developing multiple use industries and reducing the volume of wood left in the woods or destroyed in the burners of the manufacturing plants.

Sinclair Wilson (5) points out in an unpublished analysis of the Grays Harbor situation that in 1940, 42 percent of the employed persons in this area were directly engaged in some form of forestry or forest-products industries, and together with those employed in service industries dependent on lumbering in one form or another, that 75 percent of the total population derived its income from the lumbering industry. This same report noted that in 1947 there were 67 forest products industries operating in the cities of Aberdeen and Hoquiam and that they employed a total of 5,757 people. The 67 plants were distributed as follows: 17 sawmills, 3 shingle mills, 7 plywood-veneer plants, 1 pulp and paper mill, 4 remanufacturing plants, 3 sash and door factories, and 32 furniture, box, or general woodworking plants. In addition, 30 other primary reduction plants were located in surrounding territory that is considered to be part of the Grays Harbor area from an economic standpoint.

The versatility of industry in this region is at once evident from a perusal of this list of wood-using plants. Several of the factories depend primarily upon refuse from sawmills for raw material to be used in manufacturing furniture, boxes, sporting goods, and such items. The pulp mill is supplied partly from the refuse conveyors of the mills and also purchases wood from salvage logging operators and farm woodlots. A new plywood plant in the area is peeling black cottonwood for veneer which is then employed as a facing sheet over low grade cores of Douglas-fir. This plant expects to operate indefinitely from known sources of this species. The cores from the cottonwood logs are shipped to a soda pulp mill on Puget Sound to be chipped for pulp manufacture.

According to Wilson's report, the wood-using industries in the Grays Harbor area consumed a total of 488 million board feet log scale in 1946. Western hemlock and silver fir made up 48 percent of the total, Douglas-fir 30 percent, western red cedar 11 percent, and Sitka spruce 10 percent. The timber area tributary to Grays Harbor is not able to support this annual demand and in 1946 it was necessary to import 20 percent of this volume from outside areas. Much of the timber imported was Douglas-fir suitable for peeler stock.

A study made in 1947 by the Bonneville Power Administration (1) predicts that a number of sawmills and shingle mills will have to suspend operations in the Grays Harbor area by 1955. This same report predicts that employment in sawmills will decline approximately 50 percent if present manufacturing policies are maintained. Increased milling of western hemlock and silver fir together with increased refinement of lumber products and more remanufacturing plants offer a means of maintaining employment at a reasonably stable level in the future. Development of more intensive utilization by reduction of waste will also aid in stabilizing industry. The people of the Grays Harbor area are aware of their problems and responsibilities and are planning their future on a community level basis. Among the greatest assets of this community is the pool of skilled woodworking labor that has been built up over the past 50 years, and the community is determined to provide employment for all these people in the future.

Hardwood Flooring, a Result

One of the most significant incentives in bringing about integration of industry is afforded by the need for utilizing defective or low grade material that might otherwise be valueless and burned at the mill or left in the woods where it would hinder planned forest management. The hardwood flooring industry as it exists today is partially the result of this type of development and the E. L. Bruce Company of Memphis, Tenn. has been the leading exponent of such integration.

Prior to the turn of the century, hardwood flooring was strictly a luxury used in expensive homes and commercial buildings and derived for the most part from high grade logs. Development of modern dry kilns, together with practical techniques of drying hardwoods as worked out by the U. S. Forest Products Laboratory combined to make hardwood flooring available at a cost suitable for lower cost housing. The industry then expanded to meet a needed outlet for the lower grades of hardwood logs and lumber. Strip flooring was developed relatively narrow in width ($1\frac{1}{2}$- to $2\frac{1}{4}$-inch) and in thickness, and in random lengths of 1′ to 16′, which utilized low grades of hardwood lumber and waste cuttings from remanufacturing operations. Following this trend, the Bruce Company pioneered the development of wood block flooring further to utilize waste in the manufacture of strip flooring as well as slabs and edgings from conventional sawmill operations. Further integration of this company's operations is evidenced by its sales of hardwood factory lumber, hardwood dimension made from low grade lumber, slabs, and edgings, and the manufacture of furniture items from salvaged cuttings. Not satisfied with this degree of utilization, the company also finished its wood block flooring so that it is ready for use as soon as laid. Development of this versatile range of products and services has been largely achieved through shrewd application of the results of research emanating from public institutions and the company's own laboratory. It is axiomatic that new uses and better utilization be-

gin in the research stage and the operations of the E. L. Bruce Company are typical of this relationship between research and production.

Organization and Planning Needed

Organized effort is nearly always a necessary adjunct to community type integration although long-time association without formal organization is also productive of results. A bulletin of the Northeastern Forest Experiment Station (*4*) cites one such instance. The Franklin County area in the state of Maine has many varied small wood-using industries. As a consequence, a thriving market exists for all species of native woods in every quality. In addition, pulp mills in adjacent areas buy wood in Franklin County and assist in stabilizing the demand. In general, all wood is utilized for its highest potential value as veneer logs, sawlogs, or pulpwood, etc. Harvesting the timber is generally accomplished by the land owner and most sales are made at roadside. Marketing is strictly on an informal basis. The successful illustration of the integration principle portrayed in this instance is based on the diversification of wood-using plants in the area.

In the Inland Empire region of the Pacific Northwest there are several instances of integrated development that can be cited. While not involving any particular operating company or community as such, the sequence of operations in western white pine stands in northern Idaho are indicative of integration as it applies to harvesting timber. Following the primary logging operation, which removes the overstory of white pine for lumber and match blocks, the cedar understory is removed by small operators for poles. These logging contractors are enabled to keep logging costs low as the primary road system has already been established. Following the pole producers, culled cedar logs, snags, and windfalls are harvested by salvage operators and converted into fence posts and shingles.

The American Timber Company of Kalispell, Mont., illustrates proper species use in an integration plan. Ponderosa pine, western white pine, and Engelmann spruce logs are segregated in logging and sold to nearby sawmills for lumber purposes. Western larch and Douglas-fir logs are cut to railroad tie lengths and then converted into ties. Slabs and suitable edgings from the tie-sawing operation are piled systematically and when all ties in a particular area have been sawed out, a portable resaw mill is moved in and this material is processed to produce lumber and dimension stock.

The various examples that have been cited are only a few of the many that exist. Several types of integration have been typified on a single company basis, several on a community level, and others show a regional industry pattern.

In the State of Washington, the Institute of Forest Products is functioning to encourage better utilization and to promote integration at all levels. Outstanding examples of good utilization practice in the woods, in the factory, or through the joint efforts of two or more operators are studied and reported to the trade through publication. Improved methods of salvage logging or harvesting the second growth crop are also studied and publicized and every effort made to encourage new developments in this field. Inventories of leftover wood from logging and manufacturing are currently under way and the data from such studies will permit evaluation of the potential raw material supply for additional industry investments in integrated units.

More emphasis and encouragement should be placed on the community level integration which requires organization and cooperation. Research must play an important part in regional problems and often may be financed or brought about by concerted effort when it could not be accomplished by individuals. Research as applied to better utilization cannot confine its efforts to the laboratory but must include studies of markets and distribution systems as well. Integration of wood-using industries is a fundamental need of all branches of forestry.

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Notes

Forest Service Reports Damage to Pacific Silver Fir

For many years there have been evidences of beetle infestation in Pacific silver fir stands throughout the Finney Creek, Little Deer Creek, and Deer Creek drainages of the Mt. Baker National Forest in the State of Washington. In 1947 damage to this species outside the forest was noticed. The infestation during the past two years has become epidemic in all drainages mentioned. The damage is confined to silver fir and heavy killing has been observed over several thousand acres. Several species of insects are involved in the killing; however, the primary ones seem to be two or more species of bark beetles belonging to the genus *Pseudohylesinus*.

Information obtained to date indicates it takes *Pseudohylesinus* two to three years, or even longer, to kill mature trees. In some cases trees are not killed by this insect but the damage suffered results in the entrance of wood rotting fungi. Basal rot was observed in a number of trees and root rot may to some extent be a killing agent. The infestation is heaviest in mixed stands in creek bottoms and lower slopes. Above 3,000-foot elevation where silver fir occurs in relatively pure stands only a small amount of damage has been observed. One supposition is that conditions are less favorable for silver fir in mixture with western hemlock and western redcedar, or other factors may thus far have prevented spread of the infestation to stands of the former species at higher elevations.

Inaccessibility of infested areas on the national forest prevent immediate salvage operations. Road locations have been surveyed extending to the forest boundary and the intention is to continue study of the infestation and do sale preparation work this season. The study being made is a cooperative undertaking by the Bureau of Entomology and Plant Quarantine and the University of Washington. Collaboration and assistance is being given these organizations by the Forest Service, Division of Forest Pathology, Puget Sound Pulp and Timber Company, Weyerhaeuser Timber Company, and other timber owners.

Areas suffering damage on private lands outside the forest are much more accessible. In one case a road has been constructed into an infested tract and indications are that dead and damaged timber will be logged this year. In the past, silver fir along with hemlock has been considered as a pulp species. Several sawmills in the Puget Sound Region have begun sawing silver fir and veneer plants are taking more interest in it. It is hoped market conditions will continue to improve, and a stronger demand for silver fir will be created, which in turn will facilitate disposal of damaged timber and will result in better utilization.

J. B. Hogan,
Mt. Baker National Forest.

Chemical Sprays for Protection Roads[1]

Keeping protection roads open includes several phases of maintenance; namely grading, drainage, and clearing. Clearing can include the removal of trees, logs and other down material, and the clearing of roadside brush. This note treats only that portion of the clearing phase on roadside brush in western Oregon.

In some cases, this job is complete only when the brush is eradicated, and in others, only an occasional pruning operation is needed. In either case, it is a form of control of woody plants.

The methods of woody plant control have been placed in three categories by one author—basically, chemical, mechanical, and silvicultural.

In the past few years, large sums of money have been expended by various agencies and individuals to determine eradication or control measures on rights-of-ways along roads, railroads, power lines, drainage ditches, and on large areas for land reclamation and change of land use. Manufacturing companies have put numerous chemical products on the market under a variety of trade names.

Application equipment has been developed in any type from a backpack can to a 20-ton truck unit, and also for aerial spraying. Much of such equipment is expensive and specialized.

During the winter of 1947, we reviewed a good deal of material on types of control. The conclusions reached in general were that none of this *prior* work was typical of the usual situation encountered on forest protection roads. It did appear, however, that the 2-4-D chemicals might be better than other types.

After approaching several chemical manufacturing firms with our problems, all our work during the 1948 season was done in accordance with their recommendations as to types of poison and application equipment. Chemicals used were Isopropyl Ester and Alkanolomine Salt. Both are derivatives of 2-4-D and were applied under 1000 pounds pressure at the rate of 4 gallons of dilute or 1/2 to 2/3 gallons of concentrate per acre.

Results were 90 percent kill on alder under 10 feet in height with a desirable pruning effect to a comparable height on larger trees. A much lower percentage of kill occurred in the case of other species, such as willow, salmonberry, or thimbleberry. No appreciable difference in kill was noted between the esters and the salts.

Costs, based on materials, manpower, and equipment were estimated at slightly under $30 per mile.

[1] Paper given at annual conference of Western Forestry and Conservation Association, Dec. 10, 1949.

After reviewing our work and reports of other 1948 projects, we believed that chemical control had definite possibilities, at least as a supplement to other methods of woody plant control. There was also every reason to believe that the effectiveness could be increased and the cost per mile cost reduced.

Last winter, we were able to obtain a new type of chemical developed especially for woody plant control. This is a combination of 2-4-D and 2-4-5T mixed at the ratio of 1 1/3 pounds of 2-4-D acid and 2/3 pounds of 2-4-5T acid per gallon of concentrate solution. Manufacturers' recommendations for application were 1 gallon to 1.5 gallons of concentrate to 100 gallons of water for each acre of woody plants, the strength to be determined by the volume of vegetation to be sprayed.

Several No. 60 Kromer spray nozzles were purchased at 90 cents each and rigged on a section of 3/8-inch light alloy pipe into a device called a wand spray head. This was outfitted with a cheap hand air hose valve and an adapter hose and couplings to fit our regular protection tanker equipment. The whole apparatus cost less than $10 and should be serviceable for a number of years.

During May and June, 6.2 miles of roadside strips were sprayed, and one mile was re-sprayed 20 days after the first application. The average width of the strips would be between 3 and 10 feet. Pressures were varied from 200 to 600 pounds on a 4 gallon per minute fog machine, using both the wand spray head and a regular fog nozzle. The wand spray head was also used on a Panama fan belt pump, which develops less than 200 pounds pressure. The chemical was applied as nearly as possible at the recommended minimum and maximum rates of 1 gallon and 1.5 gallons per acre. The height and density of the woody plants varied considerably. Many of the pure alder strips ranged from 20 to 30 feet in height and the mixed areas from 12 inches to 12 feet. Species represented were for the most part alder, willow, salmonberry, thimbleberry, elderberry, vine maple, huckleberry, and salal. In addition to the roadside strips, a small area of cut alder and vine maple stumps was treated.

The results of the spraying now convinced us that chemical control of woody plants along many miles of protection roads should be a practical phase of maintenance. A satisfactory pruning effect occurred on all large alder over 10 to 12 feet in height. Almost a 100 percent kill to the smaller alder and willow resulted consistantly throughout the entire length of strips. Although the appearance of the salmonberry, thimbleberry, and elderberry was discouraging through the summer, by fall it was evident that the mortality would be extremely high. Vine maple did not seem to be critically affected. There was considerable damage to almost all the smaller plants of other species but the percentage of kill is still questionable.

Not one of the cut stumps, sprayed immediately after they were severed, are ever likely to sprout again.

The maximum cost, using this same type of chemical and equipment, should not be over $25 per mile. This includes 2 2/3 gallons of concentrate ($19.05), labor based on two men spraying 4.25 miles per day ($4.25) and operation cost of equipment ($1.70).

Using the minimum amount of concentrate recommended by the manufacturing company and applying the same labor and equipment costs, the total would be only $18.65 per mile.

Based on observations of our work and the work of others, the following conclusions are offered:

1. *Types and amounts of chemicals.*—The combination of 2-4-D and 2-4-5T seems to give the most constant results on individual species and on a combination of species of woody plants. The effectiveness of a like chemical of this nature under practical conditions of application varies only with the type of emulsifying and penetrating agents. The minimum amount recommended by the manufacturer proved just as effective as greater amounts. It is important, however, that the amount per acre specified be effectively distributed over the acre.

2. *Application.*—Spraying should be done during the first half of the growing season—any time after the leaves reached normal development. Any pumper that will develop a pressure of from 180 to 600 pounds and is equipped with a by-pass may be utilized. Nozzles that will develop a fine spray are desirable. We recommend using the wand spray head, with the size and spacing of nozzles used to control the amount of discharge. The size of tank used can be governed by available equipment, by the availability of water, or by the size of the spray job. Only an amount of water necessary to assure proper distribution of the chemical should be used.

3. *Height, size, and density of woody plants.*—We do not recommend spraying on strips where there is an abundance of plants over 10 feet in height. Large material should first be slashed, and the chemical then applied to the cut stumps. Where too much dense, heavy foliage is encountered, a spot re-spray should be planned.

4. *Costs.*—There seems to be every indication that the job can be done for under $20 per mile, either by the protection agency or by a contract sprayer. Any contract written should call for a spot re-spray if needed.

VANCE L. MORRISON,
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Effect of Seed Source on Height Growth of Pine Seedlings

Shortleaf pine and loblolly pine trees grown from seed from six geographic sources are being tested to determine their adaptability to the climate and soil of southern Illinois. These species are widely used for planting in this area where the badly depleted old-field sites normally do not produce successful hardwood plantations. The nearest native shortleaf pine grows

in the Missouri Ozarks, and the nearest native loblolly pine occurs in southern Tennessee.

Test seed was obtained from the various sources within the natural range of both loblolly and shortleaf pine. Shortleaf pine seed from all sources was planted in a single nursery bed in the Union State Nursery at Jonesboro, Ill. (in cooperation with the Illinois Division of Forestry). Loblolly pine seed from all sources was planted in an adjacent nursery bed. The 1-year-old seedlings were planted in 60 one-sixth-acre plots (30 plots for each species) in upland old fields on the Shawnee National Forest and on the Kaskaskia Experimental Forest. Plantings of seedlings from each source were replicated five times in a block design in order to minimize the effect of site differences on height growth and to test the statistical significance of differences in height growth of seedlings from different sources.

The mean survival of planted trees from all sources was more than 95 percent and did not vary significantly by species. The lowest survival for shortleaf pine from any one seed source was 93 percent and for any one loblolly pine seed source was 92 percent.

At the end of the first year after planting, both shortleaf pine and loblolly pine trees showed highly significant statistical differences in height, depending upon the seed source (Table 1). The measured height included growth in the nursery plus growth during the first year after planting. As a criterion for early prediction of ultimate plantation success, these height differences may mean much or they may mean nothing. This will be determined by future growth. Because of variations in seed germination and fortuitous differences in density of sowing, seedlings from some seed sources had a lower nursery-bed density than others. In some cases this could have contributed to the more vigorous growth of the trees, but in other cases high nursery density was associated with high growth vigor. Although not measured, differences in seedling height and foliage color, presumably due to seed source, were apparent in the nursery bed.

TABLE 1.—MEAN HEIGHT OF PLANTED TREES FROM SEED OF VARIOUS SOURCES AND THE STATISTICAL SIGNIFICANCE OF HEIGHT DIFFERENCES

Seed source[1]	Mean height[2]	Statistical significance
	Shortleaf Pine	
	Feet	
Arkansas	1.14	Each of the mean heights in any group differs significantly from the individual mean heights in any other group at 1 percent level (probability is less than 1 in 100 that differences are due to chance). There are no significant differences between tree-height means within groups.
Mississippi	1.12	
Oklahoma	1.00	
Kentucky	0.96	
Missouri	0.94	
Ozark National Forest	0.80	
	Loblolly Pine	
South Carolina	1.30	Each of the mean heights in any group differs significantly from the individual means heights in any other group at 1 percent level, with the exception that Mississippi and North Carolina sources are significantly different at the 5 percent level (probability is less than 5 in 100 that differences are due to chance). There are no significant differences between tree-height means within groups.
Mississippi	1.24	
North Carolina	1.17	
Maryland	1.13	
Virginia	1.10	
Arkansas	0.98	

[1] In most cases the source is known to the county or section of state. It is still too early to attach practical importance to the different sources as potential seed suppliers for southern Illinois and adjacent regions.

[2] In every case mean height is based upon five plots, each of which contained 216 planted trees. Measurements were made at end of first growing season following planting in the field.

The evidence shows that there are real differences in tree heights which can be attributed only to the fact that the trees were grown from seed collected in widely separated parts of the natural range of the species. Shortleaf pine trees from some sources were taller than loblolly pines from some sources. This is especially noteworthy because loblolly pine is characteristically a faster growing species.

LEON S. MINCKLER,
Central States Forest Experiment Station, Columbus, Ohio.

We Present

Henry J. Malsberger

From high up on the fifteenth floor of the First National Bank Building in Atlanta, Henry Malsberger can look out over a sizeable chunk of the State of Georgia. From where metropolitan Atlanta blends into the countryside, a vast forest acreage extends to the horizon. If he ever views this expanse of green southern pine with a smile of satisfaction, he is entitled to a little self approbation for he has definitely made a contribution to the future of the Southland.

A hard-headed Dutchman from Pennsylvania, Henry Malsberger was the third professional forester to be employed by the State of Florida and the second titular head of the Southern Pulpwood Conservation Association. During twenty-five years of forestry employment, Henry has worked for a sawmill company, a state government, and a private industrial organization; and to all three he has made contributions that have enormously influenced the practice of forestry and the utilization of forest products in the South.

Born October 15, 1902 in Pottstown, Pa., and christened Henry James Malsberger, his early years were characterized by a keen zest for all sports, particularly football and baseball in which he excelled, close attention to his studies, and the fact that his only girl was a certain Dorothy Quicksell, also of Pottstown. In 1924, a year before he was graduated with a B.S. degree in forestry from the Pennsylvania State College, they were married. Today she is Dot to a host of foresters, industrialists, and friends over the South.

Immediately after graduation, in 1925, Henry headed to Florida to go with the St. Andrews Bay Lumber Company of Sherman. His first assignment was to improve the kiln drying methods used by the company. So well did he perform his duties that he was made assistant purchasing agent for the mill.

When the newly organized Florida Forest Service beckoned, Henry soon was fighting fires, planting trees, and performing the many other duties of a young and active forest assistant. In this position he was in charge of one of the first areas in Florida under organized fire control, later made a part of the Osceola National Forest.

The first Civilian Conservation Corps camp in Florida was in his district, and future camp superintendents were trained there under the Malsberger precepts of hard work and intelligent planning. He spent much time with the late and beloved Austin Cary, one of the early disciples of good forest management and fire protection. Later, as an assistant state forester, Henry wrote a text on the state's forest resources for the Florida school system that is still in use today.

Henry J. Malsberger

Successively he worked his way up to district forester in 1931, to assistant state forester in 1934, and to director of forests and parks in 1937, a title later changed to state forester and park executive.

During his tenure of office as director of state forests and parks, the organization rapidly expanded its services, increased the acreage under fire control, and stepped up its tree planting program. Popular with all his employees, he was considered one of the outstanding state foresters of the nation.

During his residence in Florida, four children were born into the Malsberger family, three boys and a girl. With three boys at home, it was natural that Henry would manifest an interest in other boys. In early 1935, together with Dot, he drove down a dim woods trail to look over a proposed summer camp, now the site of Camp O'Leno, Florida. In the summer of that year, one of the first forestry camps for boys ever held was at Camp O'Leno. Today this popular activity sees thousands of young Americans spending one to two weeks during the summer months learning the rudiments of forestry and having a good time together out of doors. As manager of the Southern Pulpwood Conservation Association, Henry has promoted the summer camp movement as one of the major phases of the association's program. It is no exaggeration to say that Henry Malsberger is among the founding fathers of the idea of forestry summer camps for today's youth of the South—the landowners of tomorrow.

When the job of forester with the Southern Pulpwood Conservation Association became open in 1945, the board of directors of that organization did not look far to find their man for the accomplishments of Henry Malsberger were known beyond the borders of Florida. Most of them knew that Henry was an experienced administrator, a capable public speaker, the possessor of an easy-to-get-along-with disposition, and a sound thinking forester, highly respected by his colleagues. In accepting their offer to become forester for the association, Henry promised the directors he would do his best. As anyone familiar with the work of this organization can testify, Henry has done just that.

The South's huge pulp and paper industry is ably represented in forestry councils by the Southern Pulpwood Conservation Association. So well-known and respected is the association that it is recognized in the planning and activation of almost every educational program in the interest of southern forestry. Such high regard on the part of the association's contemporaries is in keeping with the growing knowledge that the pulp and paper industry in the South has made considerable contributions to the major advances gained in southern forestry during the past 15 years.

Founded in 1939 by a number of the then brand new pulp and paper mills to stimulate interest in the betterment of forest practices and encourage the growing of more trees, the association has grown from an original staff of one forester to its present group of five technically trained men. Association headquarters are maintained in the First National Bank Building in Atlanta, Georgia, with four field men scattered over the 11 southern states which comprise the association's scope of operations.

Today, of the 55 mills operating in the South with a daily tonnage capacity of 21,118 tons of pulp, 32 mills with a rated production of 16,624 tons are active participants in the association's program. Included also in its membership are 70 dealers supplying pulpwood to the industry. Annual meetings are held in Atlanta during February where interesting and thought provoking programs are always to be had. In addition, a summer field meeting is held in some part of the territory where a particularly outstanding forestry project is viewed by the association members.

Only two men have headed the association in its 11-year history. The first forester was Frank Heyward, Jr., former state forester of Georgia and now associated with Gaylord Container Corporation.

The association, together with its member mills, has set the pace in the South and the nation for sponsoring constructive industrial forestry educational movements. Of particular significance are the boys' forestry camps, partial cutting and thinning demonstrations, easy-to-read forestry literature and documentary films on forestry. Even with its multi-facet program, the association has harmoniously blended its activities with many other organizations to work toward a common goal. It can be said to its credit that the association numbers its friends by the thousands.

Today the South is pointing the way toward treating trees as a crop, thereby making forestry a paying proposition to tree grower and user, and integrated utilization a reality. Spearheading this great forward movement is the pulp and paper industry and the Southern Pulpwood Conservation Association. Separated, neither could accomplish the goal—together, its consummation is a foregone conclusion.

As manager of the association's activities, Henry has pushed the development of forestry educational films, several of which have received nation-wide acclaim for text and method of presentation. His has been the guiding hand in subject matter for film recording and his great knowledge of the fundamentals of the forestry profession have made these films documentary evidence of forestry in the South. Requests for prints of his association's film have been received from all over the world.

Elected a Junior Member of the Society of American Foresters in 1929, he became a Senior Member (now Member) in 1941. He served as Chairman for the Southeastern Section. In a career involving a great deal of travel away from home, he has had to budget his free time sparingly to civic and extra-curricular activities.

To Henry Malsberger the Southland has been good. He has raised his family to manhood and womanhood without any more than the usual trials and tribulations of a four-child family. He has earned his way to life and is possessor of one of the most highly respected jobs in professional forestry.

But Henry Malsberger has also been good to the South. He has worked many long and hard hours on the simple premise that we must grow trees for tomorrow. He has contributed to forestry education and to public knowledge of the forest resource. He has stood for high ideals and sound practice in the profession. He has adopted the broad viewpoint and has looked a long way down the highway of tomorrow.

Yes, Henry Malsberger has enjoyed the South. And the South is a better place to live in because of this Pennsylvania Dutchman who came to Dixie a quarter-century ago.

B. E. ALLEN.

Points of View

To Correct Some Inaccuracies

This is in the nature of a supplement to Anthony Netboy's review of Peattie's *American Heartwood* published in the January 1950 JOURNAL OF FORESTRY. Even though the book was written to indicate the influence upon our past history and national spirit of "the background of the primeval American Forest, which had so much to do with making us what we are," one would expect the author, regarded by his publisher as "America's leading nature writer" and "trained botanist," to be reasonably accurate in his statements about trees. But this is not the case. Let me cite some of the inaccuracies.

On page 53 we read, "the cambium lies just under the bark; it is the bit of green that you see when you scratch a twig with your nail." Tissues such as the cortex external to the cambium often contain chloroplasts, but not the cambium. And on page 54, "The first sapwood in spring is apt to be a dark and narrow band followed by a lighter and broader band of summerwood." In this sentence, the "first sapwood in spring" was probably intended to be the euphonious equivalent of springwood, which, for the long-leaf pine referred to and softwoods generally, would be light and broad, followed by a darker and usually narrower band of summerwood. It certainly should be expected that the references to heartwood would be properly presented. However, we find on pages 55, 164, and 173 the implication given that the change from sapwood to heartwood is accompanied by strengthening and toughening of the wood. Actually, however, the change from sapwood to heartwood in most species does not involve any strengthening or toughening even though it may, in many instances, make the wood more resistant to decay-producing organisms and wood-destroying insects. In fact, the innermost heartwood near the pith is ordinarily appreciably weaker than the sapwood occurring at the same height in the tree.

On page 124, he writes, "Lignin is the cementing substance that holds the cellulose particles together. Cellulose is the hard part of wood—what makes wood woody." But it would be much closer to the facts to say that it was the cells rather than the cellulose particles that are held together by the lignin. And most botanists and wood technologists would state that it was lignin, or at least the process of lignification, that makes wood woody and thereby harder and more durable than non-lignified but cellulosic plant tissue. Finally, to show how dangerous a little knowledge may be, I quote this statement from page 125: "Yet the internal structure of the rods is hollow, with many branching passageways. Indeed, one gram of cellulose material may have an internal surface equal in area to your bathroom floor. That's one reason wood is light, as compared with the same volume of iron or stone and why it makes such a good insulating material." These branching passageways have nothing to do with the insulating quality of wood and contribute little to its lightness since they exist only when filled with some adsorbed polar liquid such as water and the cell wall molecular aggregates come together, essentially eliminating the passageways when wood is completely dried. It is principally the cell cavities or lumina that make wood such a good insulating material, and, of course, these also contribute to its lightness. But even these cell cavities are incidental in the weight comparison with iron, for the density of solid dry wood substance with all voids completely eliminated is only about one-fifth that of iron.

A book such as this could be technically informative as well as entertaining if the statements made were entirely accurate. Let us hope that the *Sylva of North America*, which is promised in *American Heartwood*, will fulfill all the requirements of a valuable book of its kind.

R. A. COCKRELL,
University of California,
Berkeley.

Rejoinder on Public Regulation

The rather excited comments by both Hoene[1] and Spearey[2] covering my JOURNAL note of last November[3] impell me to clarify some of their impressions. It is apparent from their reactions that I did not make myself entirely clear, but clear enough so that they failed to find a direct quotation advocating some of the things which they imply my letter contained.

Rather than continue this ad infinitum I should like to make just three points clear. The basic issue which faces American democracy today is the need for disciplining ourselves for resource conservation while still maintaining a free society. Although Hoene questions that we are overcutting our sawtimber resource by 150 percent and that forest practices on private lands are still destructive on a majority of operations, he offers no evidence to the contrary. Therefore, we have two alternatives: either to refuse to face the facts and let our resources foundation continue to drag down our economy and freedom into Asiatic poverty, or to face facts and discipline ourselves to the extent that we live within our resource budget.

There is no evidence to show that self discipline on the part of a majority of forest owners is resulting in adequate improvement in forest practices (even to guar-

[1] Hoene, John V. More comments on federal forest regulation. Jour. Forestry 48(3). 1950.

[2] Spearey, Frank. Federal forest regulation and the welfare state. Jour. Forestry 48(2). 1950.

[3] Stoddard, C. H. Comments on H. H. Chapman's "Showdown on federal forest regulation." Jour. Forestry 47(11). 1949.

antee sufficient restocking, much less achieving sustained yield), in spite of all the programs now afoot. Facing this situation realistically as long as ten years ago, both the Society of American Foresters and the Joint Congressional Committee on Forestry endorsed the principle of public regulation, implying that state regulation was preferred. Since then many groups of lumbermen and others have endorsed state regulation as preferable to federal. I have no quarrel with that nor did I state it. But after ten years of trial there are only a few states with even decently adequate minimum regulation. In some cases the laws are merely efforts to head off more stringent federal measures.

The principle of the least amount of government is a sound one. It evidences the ability of a people to govern themselves without laws. But any government would be most negligent which failed to propose measures designed to keep a people from ruining the basis for its own economy. I will not try to answer the cries of alarm over socialism and welfare state since these are not at issue, except to repeat that we have had regulations for a long time protecting the public from all manner of dubious practices — Pure Foods and Drugs Acts, Securities and Exchange Acts, etc. to mention a few. In no case do I find that either our civil freedoms or our democratic institutions are threatened by protective laws which are enacted by a duly elected Congress, and held in check by the Supreme Court of the United States. Democratically enacted regulations merely protect the economy from its own excesses, and if anything, they are intended to head off government ownership, not bring it on!

One final point raised by Hoene refers to restricting the vote of Society members on the question of regulation to those who make their living from their own forest land. I happen to have a larger personal investment in forest land than most of my fellow foresters employed by corporate enterprise and have at times derived my full living from this land. Hoene's restrictions would seem to be undemocratic in themselves though he is a most ardent spokesman on the subject. The fact remains that any owner who is honestly doing a sincere forest management job on his lands has less than nothing to fear from regulations, be they federal or state. But both Hoene and Spearey put themselves in the questionable position of defending those who would continue to practice forest mismanagement for the sake of "defending human freedom" despite the ruination left in their wake. If this is to be our philosophy, let's admit we are no longer conservationists, but rather apologists for the status quo.

CHARLES H. STODDARD,
Minong, Wis.

Reviews

Better Douglas Fir Forests from Better Seed.

By Leo A. Isaac. 64 pp. Illus. University of Washington Press, Seattle, 1949. $1.

Foresters in the Douglas-fir region should receive *Better Douglas Fir Forests from Better Seed* as enthusiastically as they did Leo Isaac's earlier publication, *Reproduction Habits of Douglas Fir*. In this publication is summarized the information available on the effect of source of seed and inherent variation in Douglas fir on the success and growth of forest plantings.

With the increased emphasis being placed on planting in the Douglas-fir region, this publication is timely because it should help prevent repetition of some of the errors that have been made in earlier plantings. Although European experience with Scotch pine has pointed out the need for attention to source of seed when considering artificial reforestation, the consequences of error in choice of seed with this species may not be as great as with Douglas fir because altitude is such an important factor in the Douglas-fir region.

Isaac lays the groundwork for later discussions by summarizing the available information on Douglas-fir seed, natural and artificial reproduction, and growth. The reader is impressed with the amount of fundamental information that has been obtained through past research on this species, but in few instances is the information sufficient to permit the writer to state without qualifications the results that can be expected when given practices are followed. The conclusion the critical reader must arrive at from this excellent treatment of the available literature and knowledge is that we have made but a start in the accumulation of fundamental information basic to an understanding of why Douglas fir behaves as it does under various conditions.

His summary of the information available on the existence of geographic races or strains of forest trees brings together most of our knowledge on this subject. The growth records on a number of seed-source plantings accumulated by Isaac's co-workers and others in the Pacific Northwest, both on experimental plantings and forest plantings, are presented to illustrate the existence of distinct geographic and local strains for this species. The important effect of altitude of seed source and of planting site on growth and successful establishment of these races is emphasized and justly so because numerous plantation failures have resulted through failure to pay attention to this factor. Of particular interest is the evidence pre-

sented to show that the safest and best planting stock does not always come from seed gathered near the planting site. The superiority of several strains when planted over a rather wide range and distant from the source of seed is evidence that the best Douglas fir for a given site is not necessarily that which is growing there at present. This finding offers foresters an opportunity to improve the Douglas-fir forest on certain sites where planting is necessary by introducing a superior strain. The writer also suggests the possibility of interplanting stock of superior strains on such sites even when stands are being naturally regenerated.

Being a practical forester, Isaac suggests a practical program of insuring that the best possible planting stock, based on available knowledge, be used in the rapidly growing planting program in the Douglas-fir region. He stresses the need for careful seed collection and adequate certification. His recognition of the incompleteness of our present information causes him to interject certain safeguards in these practices that everyone acquainted with experiences with forest plantings over long periods can appreciate.

Under the heading, "The Job Ahead," Isaac outlines the work that must be done through the cooperation of all forestry agencies to increase our knowledge of Douglas-fir seed sources and insure the selection of the most productive and best adapted strains for the varied sites and broad range of the species. He does not neglect the possibility in hybridization and polyploidy but relegates such effort to its proper place in what is a truly immense future research effort if foresters are to meet the challenge and realize on the possibilities that such study affords.

The foreword to the publication by Dean Gordon D. Marckworth, College of Forestry, University of Washington, introduces the subject and tells how this study came about. Mr. Isaac, the College of Forestry of the University of Washington, and the U. S. Forest Service deserve real credit for the cooperative effort that resulted in the publication of this outstanding, readable, and practical presentation of our knowledge of Douglas-fir seed and the application of this knowledge towards the production of better Douglas-fir forests.

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The Management of Farm Woodlands.

By Cedric H. Guise. New Second Ed. 356 pp. Illus. McGraw-Hill Book Co., Inc. New York. 1950. $4.

Progress usually can be made only as improvements or more efficient techniques are adopted and put into use. Individuals concerned must be made aware of such through education, otherwise little progress may be made. The author has, therefore, incorporated within this second edition all the most valuable material in the first edition which is basic in principle and not subject to change and, in addition, he has included the new important techniques of forestry which might apply to small woodlands, such as improved methods of timber estimating, the use of power saws and planting machines, improved marketing methods, and the like. The same general outline used in the first edition has been followed in preparing this one.

The author begins in chapter one with descriptions of the four principal types of farm woodlands followed by what farm woodlands have to offer and their extent throughout the United States. The condition of farm woodlands today as well as the scope of forestry and forest policies are also well covered. Chapter two covers in considerable detail the structure and physiology of trees, a knowledge of which is essential in all forestry practice. Chapter three is concerned with the ecology of woodlands dealing with such terms and topics as stand, type, site class, pure and mixed hardwoods, even and uneven-aged woods, classification of trees by size classes, silvicultural characteristics of species, soil, moisture, light requirements, rate of growth, resistance to fungi, and insects. A list of all of the important trees of the natural forest regions of the United States is given by regions. The next four chapters deal respectively with the volumes of woodland products, surveys and maps, the volumes of trees and stands covering in detail timber estimating methods, instruments and computations, the increment and yield of growing timber. In all there are fourteen chapters, each dealing with a specific phase of farm forestry. The remaining chapters are concerned with each of the following: care and improvement, planting, protection, utilization, marketing, farm timber preservation, and woodland management. Chapter eight—The Care and Improvement of Woodlands—is perhaps the most valuable one in the book. In this chapter the author gives a fine treatise on silviculture and presents a comprehensive treatment of intermediate cuttings which is a great improvement over that found in the first edition.

The value of the book is greatly enhanced by many fine photographs, charts, diagrams, and up-to-date tables. Many selected references of recent authorship are found in the back of the book. The book lacks a glossary of forestry terms which, in the opinion of the reviewer, should be included. This is not only an excellent text in farm forestry courses but could be used to advantage as a supplementary text in a course in general introductory forestry. It should find a place on the shelf of every farmer owning woodlands, every forester, county agent, and conservationist where it may be used frequently. No one is more qualified to write a book of this kind and the author should be congratulated upon completing a workable text which not only can be used in the classroom but can be read and understood by those concerned who may be lacking a large amount of technical forestry education.

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The Cascades.

Edited by Roderick Peattie. 417 pp. Illus. The VanGuard Press, New York. 1949. $5.

This book, latest edition to the American Mountain Series, offers more knowledge and appreciation of the Cascade Mountains than any other volume to be had. Here we have writers who know their subjects and who write interestingly about them: Margaret Bundy Callahan, Harry W. Hagen, Waldon F. Heald, Charles D. Hessy, Jr., Ellsworth D. Lumley, Herbert Lundy, Grant McConnell, Walter F. McCulloch, and James Stevens. Persons already acquainted with the Cascades or who expect to visit the Northwest, and those who love mountains but prefer to explore them through the senses of others, will want to read *The Cascades*.

Editor Roderick Peattie, like the pioneers traversing the Oregon Trail 100 years ago, faced a real problem when the rugged backbone range of Washington, Oregon, and northern California stood before him. The range is vast in extent and diverse in character. Foresters know it has two entirely different forests — the tall, close-growing, and dark rain forests; the sunny, park-like dry forests. Geologists make much of the outstanding rock formations and fossils that record 40 million years of sweeping upheavals from tropic to frigid climes, from smooth plains to jagged peaks. Even the casual tourist sees the gleaming Olympian volcanoes like Ranier and Shasta are one kind of mountain system, while below them and seemingly detached is a different system, forest mantled and labyrinthine. The Cascades are a setting for so many and such varied interests that it would hardly be possible to get the whole story enfolded between the covers of one book. And, too, mountains are no less interesting for what you can see and do in them than for what they can do to you. How is a writer to convey the effect of such mountains on the thinking of the people who look up to them from city office windows, highways, and ranch homes?

Peattie divided the task of describing the Cascades among seven men and one woman. All but one of these authors are long-time residents of Oregon or Washington. Not all of them are professional writers—the authors include a mail man, a high school teacher, and a forestry professor—but it is doubtful if the professional can be distinguished from the nonprofessional in this book. The mail man who writes of the Cascade wild flowers manages something of John Muir's style in nature description.

The book has an introduction by Peattie and nine chapters covering the following subjects: history and people, topography and geology, places to see, logging and mining, forests, flowers, birds, fishing in Cascade streams and rivers, mountaineering, and skiing.

On the whole, it seems Peattie's method of handling the subject is well chosen. There is a change of pace as one writer leaves off and another takes up. Some of the writers localize, others swing all the way from Mount Lassen to the Canadian line. Most readers will not object to this method because it takes closeups as well as panoramas for effective picturization. The book can be picked up and read in sketches, one section now, another later, and the divisions prove handy for reference. Eight authors certainly bring more of knowledge and viewpoint to the text than would ever be possible for one author, although the single author could achieve smoother flow of ideas from one chapter to the other.

In a large degree, the Cascades is a guide book on what to see and what to do. Those addicted to fishing, skiing, or mountaineering will revel in the chapters on those topics. They are excellent. Herbert Lundy offers a training course in where and how to fish the turbulent Cascade rivers. His powers of description are such that nonfishermen are apt to be caught up in the spell of Isaac Walton's art. Many readers will agree that Grant McConnell's chapter on mountaineering is the most fascinating reading of the book. The subject is one of pure adventure—challenging and exciting.

Those writers assigned the subjects of trees, flowers, and birds naturally have more of a task in weaving their facts into a good story. It is one thing to describe trees from a technical standpoint; it is another to describe them so as to register with the popular mind. Yet, Professor McCulloch of the Oregon State College School of Forestry succeeds in clothing many of the trees with personalities at once appreciated by those who know them. For example, he does not say of the ever-engaging alpine fir that it frequently retains heavy foliage to the ground, but "lower branches cluster thickly all the way down to the ground, where they ripple out and drape around the base of the tree like a heavy velvet dress, too long for its wearer." It appears that all tree names in the book are right, in itself a feat for any popular book.

McCulloch works in a great deal of sound forestry knowledge, for he is a silviculturist able to picture for the layman the ceaseless struggle and change in these forests.

James Stevens describes the modern Douglas-fir tree farm with its various operations, and the reasons therefor. His "Mamook Tree Farm" exemplifies the applications of science in handling western forests. The picture is one of order and "trees forever"—a scene happier, if less exciting, than the one belonging to the day of the bull team which he depicts in dramatic fashion.

The book might well have had a chapter on the national forests because the Cascades are mostly included in them. References to the Forest Service and its activities are numerous and perhaps suffice. On the whole, viewpoints on forestry and lumbering seem balanced and should not give rise to complaints that misconceptions have been furthered.

On the critical side, the reviewer wonders if *The Cascades* would have been enhanced by the inclusion of more history, legend, and folk lore. It is recognized, however, that the Cascade range has never been settled as were the Adirondacks or the Ozarks. Story and legend could have been drawn from the Indian tribes. On the other

hand, the red man was not up to his best culture in the Cascade environs. Perhaps more could have been done to depict the wildness of the Cascade domain. Though subject to much logging the forests remain inviolate and deep, and they extend to the very edge of large urban areas. At all seasons of the year, it seems, searching parties hunt lost people or planes.

John Muir called the Sierra Nevada the "Range of Light". The Smoky mountains have been called the "Range of Charm". The Cascades is the "Range of Greenness and Grandeur". Green it is with incomparable evergreen forests; grandeur is exemplified by great peaks that seem higher than any in the country because of the low elevations from which they rise. This new book of the American Mountain Series tells all this and more. It may not be the best account of the Cascades that will be written, but it is both interesting and unusually accurate, and will do until a better story comes along.

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The Way To Game Abundance. By Wallace Byron Grange. XVIII + 365 pp. Illus. Charles Scribner's Sons, New York. 1949. $6.

The author writes from a background of wildlife work, which includes work with state and federal agencies and management of a private game farm. In the introduction he points out that he has been "researcher, administrator and game manager." Most of his work, however, has been in Wisconsin, and thus Wisconsin conditions form the core of the discussion on cover types and habitat management.

Long quotations in a review could mean that the reviewer is an indolent person. However, in the present situation, this risk is being taken because the following excerpt appears to summarize the message of the book and at the same time points up basic considerations in the field of wildlife management.

"The way to game abundance is not a simple one. It is not a matter of building larger state game farms from which more thousands of Pheasants, Quail, Rabbits, Grouse or Ducks can be distributed for release, although restocking has a definite, but minor, place. It is not solely a question of appearing before state legislative committees or before congress to urge the passage of new laws, although there are definite opportunities for new incentive legislation. It is not a question of protection (law enforcement), since this can be effective only if suitable habitat exists. It is not a problem of open and closed seasons, although proper seasons are of basic importance. The way to game abundance does not call for unrestricted destruction of predators—it may even call for encouragement of larger numbers of certain predators. Neither is artificial winter feeding, or duck food planting, or the establishment of refuges the single key which will unlock the door to abudance.

"Game abundance is a function of suitable habitat—the greatest single thesis of this volume. All other management measures depend and impinge upon this one. With suitable habitat, many such measures can help produce abundance. Without suitable habitat, no other measures are of value.

"Suitable habitat is a function of land. Its preservation, creation and improvement can be accomplished only in terms of land, and with the control of land. So long as game management remains a theory, or an ideal, apart from actual land management, it is of no effect. Only when we can and do get down to actual 'dirt management'—land management—is there hope for increased abundance of game."

Mr. Grange states in the introduction that he was writing for the layman; that he was purposely avoiding scientific forms and terminology. However, it seems probable that the book will be widely read by professional workers. It is pointed out that material was drawn from the work of many individuals, yet the text leaves a definite inference that most of the ideas are the author's. This feeling is intensified by the few references to other workers, some "digs" at scientists, and the absence of a bibliography. In this connection many will wonder why Mr. Grange does not mention such contributions as the ecological work of Frederick Clements, the population studies of Charles Elton, and Edward Graham's *Natural Principles of Land Use.*

The vital role of plant succession is emphasized and re-emphasized. This is borne out in photographs on the jack pine and aspen succession series as well as in the text. The effect of fire on habitat is discussed in considerable detail. Its cycle aspects are related to climate and from this the author develops a drouth-fire-plant succession-game reproduction relationship.

Fire as a habitat management tool is recommended. Although the author points out that he advocates controlled fire, this point may be masked by the thorough treatment of fire as a great denuder, and, per se, the initiator of plant succession and subsequent creator of game abundance. Moreover, the author makes the use of fire too simple, by stating that one technician skilled in fire behavior could control burn large acreages without assistance.

Inadequate space is given to the fact that a very small percentage of the land in this country is managed solely for wildlife. Thus the author neglects to develop properly the concept of fitting wildlife food and cover needs into land use programs. This obviously is a basic factor regardless of whether the land is public or private. Failure to stress that habitat management and wildlife production are tied to the other uses of the land is a major weakness of the book.

The author cannot be accused of timidity or lack of imagination. In fact these features add much to the reading of the book. For the discerning reader, some of these observations and opinions will seem neatly stated. For example, in discussing predation, the author states: "The full enjoyment of hunting, and the test of the real sportsman as well, comes when one appreciates the fact that predators are necessary to the scheme of

nature—*when one could have shot a bird of prey or a Fox but chose not to do so!*"

The Way To Game Abundance will have its champions and antagonists—one could hardly read it and remain neutral all the way through. Many will find that they disagree with the author as often as they agree with him. In any event, it is a book well worth reading. Its central theme—that game management is primarily habitat management—is a fact that technicians, land owners, and the public must all appreciate if there is to be game abundance.

LLOYD W. SWIFT,
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Insects Affecting Forest Products and Other Materials.

By W. J. Chamberlin. 159 pp. Illus. Oregon State Coll. Cooperative Assoc., Corvallis. $2.75.

This book should be valuable to foresters, particularly products majors, engineers, and others who are concerned with damage to timber products caused by insects or their near relatives, the marine borers.

When the author, who has been an authority on forest entomology for 30 years, was asked to offer a course dealing specifically with insect damage to forest products, he found existing information to be widely scattered or appearing only as part of a general treatment of forest entomology. Once he had organized the desired course, he began preparation of this book to consolidate pertinent information relating to product damage.

A general discussion of insect characteristics and habits is confined to the introductory chapter. These points are treated only as a basis for understanding the life histories of individual insects as they affect the prevention or control of damage. The introductory chapter also includes a synopsis of the type of damage to wood products caused by insects and marine borers. Damage is catalogued under the heading of:

1. Insects injurious to living trees in such a manner as to cause defects to the products.

2. Attacks on dead trees, logs, bolts, and green lumber.

3. Injury to seasoned products by insects.

4. Injury to materials in salt water.

The discussion of damage by beetles, which occupies one-half the book, is introduced by a synopsis of the more important families of beetles. Since the synopsis is based largely on the habits and type of work distinguishing the various families, it provides a helpful key for the identification of beetles and beetle damage.

Other sections of the book treat termites, marine borers, and the less commonly encountered insects such as bees, wasps, ants, horntails, butterflies, moths, and flies which may cause damage in timber products.

One short chapter deals with insects attacking metal. This chapter has been included for the benefit of engineers who may be interested in such damage, as well as in insect damage to poles, stubs, crossarms, etc.

The whole text is well illustrated with 101 line drawings and photographs. The more than 150 references offer the reader leads to further information concerning the insects, their work, and their control. The growing breadth and specialization of forestry creates a need for specific publications such as this one.

J. B. GRANTHAM,
Corvallis, Oregon.

Textbook of Dendrology Third Edition.

By William H. Harlow and Elwood S. Harrar. 555 pp. Illus. McGraw Hill Book Co., New York. 1950. $5.

This book well deserves its high reputation as a standard textbook for the teaching of dendrology in forestry courses. All the botanical characters especially helpful in the identification of the commercial trees of the United States, have been brought together under families, genera, and species.

Tables showing the important distinguishing characters are especially helpful as are also the excellent photographs of essential features. There are brief descriptions of some of the less important tree species. In addition, general information is given on important species including data on size, habitat, and range. In this new edition there are few changes, consisting mainly of a rearrangement of material in the Introduction and a revision of a number of the range maps and the range descriptions. U. S. Forest Service usage of standardized plant names has been followed and names commonly used in the lumber trade have, in a number of cases, been given. A glossary giving the derivation of many of the scientific names has been added.

In Figure 1 of the Introduction showing leaf shapes, No. 2, formerly labeled "subulate," has been corrected to "scalelike." It seems that some description should have been given of the subulate shape other than the term "awl-shaped" appearing in the Glossary. Illustrations of this leaf shape are rare and even Sargent in his *Silva of North America* does not show a separate enlarged illustration of a typical form as occurs in Juniperus. There seems to be some looseness in the use of such terms as linear, lanceolate, ovate, oblong, and acicular as applied to the leaves of the Coniferae. This is true of other tree manuals, different authors applying different terms to describe the leaves of the same species. Although there is considerable variation in coniferous leaf shapes, greater uniformity in the use of such terms would seem to be desirable. Incidentally, the drawing of an acicular leaf in Figure 1 which tapers uniformly from base to apex does not represent a pine needle.

Some descriptive terms in the species tables do not altogether agree with those in the species descriptions and in at least one case (Alaska-cedar) the new name has not been changed in the Index.

Some of the range maps seem to need further revision in order to include new Forest Service data

as shown in the 1949 Department of Agriculture *Yearbook*. A number of the range descriptions do not seem to correspond with the maps; however ranges are often difficult to describe in print.

These points are minor and do not impair the usefulness of the book which is a valuable addition to the library of anyone interested in trees, whether for a career in forestry or just to become more familiar with the different species, their characteristics, and ranges.

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Sur Quatre Hybrides de Genres Chez les Abietinees. (On four inter genus hybrids in the Abietineae.)

By Mme. Van Campo-Duplan and H. Gaussen. Bull. Soc. Hist. Nat. de Toulouse, tom 83, and Trav. Lab. forestier de Toulouse t. I, vol. IV, art. XXIV, pp. 1-14. 1948.

Mountain hemlock, *Tsuga mertensiana* (Bong.) Sarg. has often struck foresters and botanists as being quite different from other hemlocks. This difference was recognized in Van Tieghem's proposal that this species be set apart in the genus *Hesperopeuce*, which is at present considered a section of the genus *Tsuga*. Campo-Duplan and Gaussen, seeking to explain some of the features of *T. mertensiana*, advance the hypothesis that three of our hemlocks of the Pacific northwest owe their origin to hybridization between *Tsuga* and *Picea*. They point out that *Tsuga mertensiana*, *T. heterophylla* and *Picea sitchensis* have roughly the same areas of distribution, and proceed to a detailed anatomical and morphological comparison of these three species. They find, from a study of 40 characters, that *T. mertensiana* resembles *T. heterophylla* in 9, *Picea sitchensis* in 13, and is intermediate between the two in 18. They conclude that *T. mertensiana* (*T. Hookeriana* Carr. in their usage) has arisen by intergenus hybridization and propose the name *Tsuga-Picea Hookeriana* (Carr.) comb. nov. to indicate the origin of this species.

Tsuga crassifolia Flous, the California form of *T. mertensiana* recently described is, by a similar analysis, found to have originated by hybridization of *T. mertensiana* and *Picea engelmanni*. Since the former parent is presumed to be of hybrid origin, the second hybrid is named *Tsuga-Picea-Picea crassifolia* (Flous) comb. nov. *Tsuga jeffreyi* Henry, long accepted as a hybrid between *T. mertensiana* and *T. heterophylla* is similarly analyzed and renamed *Tsuga-Picea-Tsuga jeffreyi* (Henry) comb. nov. A fourth presumed intergenus hybrid, *Tsuga longibracteata*, renamed *Tsuga-Keteleeria longibracteata* (Cheng) comb. nov. is found in China.

This luxuriant nomenclature need not dismay the cruiser who wants to head up his tally sheets correctly, since these forms can be separated only by rather "long-haired" experts. Nevertheless, there may be a problem in nomenclature shaping up if sufficient evidence is found to support these hypotheses.

Two points may be raised concerning the evidence for the hybrid origin of these forms. First, the writers have considered exclusively the present distribution of the presumed parent and hybrid species. Paleo-botany has given us a lively, if incomplete, picture of the wanderings of plant species in past geological epochs. The case for hybrid origin of these hemlocks would be stronger if it could be shown that the presumed parents were somewhere in contact at the undoubtedly remote period when the crossing is supposed to have occurred. Secondly, one would expect these crosses to be often repeated, to find backcrosses of the hybrids to one or both parents, and to find numerous segregants as a result of interbreeding among the hybrids, if, as the writers believe, the parents and hybrids are still in contact. The writers do not discuss this point, and so far as the reviewer knows, no botanists working the Pacific Northwest have found such hybrid swarms in hemlock.

Whereas hybrid genus names (e. g. *Cupressocyparis* and *Raphanobrassica*) may be acceptable where there is direct evidence of hybridization, one may question whether it is the purpose of a binomial (achieved by liberal use of hyphens) to indicate the hypothetical evolutionary history of a plant. Whatever the outcome in nomenclature may be, this paper should stimulate foresters to look at their hemlocks and spruces more closely. It will certainly encourage tree breeders to test the cross-ability of *Tsuga* and *Picea* as the writers suggest.

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Current Literature

Compiled by MARTHA MEELIG, *Librarian The New York State College of Forestry*
Range Management Section Compiled by FRANCIS FLICK, *Library, U. S. Department of Agriculture*

General

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Society Affairs

Compiled by ROBERT D. HOSTETTER, *Assistant Executive Secretary*

Officers and Members of the Council—1950-1951

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Atlanta, Ga.

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Albuquerque, N. M.

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Department of Natural Resources,
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STANLEY G. FONTANNA,
State Department of Conservation,
Lansing 13, Mich.

GORDON D. MARCKWORTH,
College of Forestry,
University of Washington,
Seattle 4, Wash.

EARL PORTER,
Southern Kraft Division,
International Paper Company,
Mobile 9, Ala.

Council Meets In Chicago

The midyear meeting of the Council will be held June 19, 20, and 21 in Chicago.

Any members having business to bring before the Council, or having comments, suggestions, or criticisms of any phase of the Society's activities, are invited to write to the president or the executive secretary.

A winter meeting of the Council will be held next December 13 in Washington, D. C. in connection with the Golden Anniversary meeting of the Society.

Society Delegates Discuss Accrediting

Paul A. Herbert of Michigan State College and C. E. Farnsworth of the New York State College of Forestry represented the Society of American Foresters at the fifth annual national conference on higher education on April 17 to 19, 1950 at Chicago, Ill. The meeting was sponsored by the department of higher education of the National Education Association of the United States.

Dr. Herbert is a member of the Society's Committee on Accrediting Schools of Forestry of which Myron Krueger is chairman.

The study groups attended by the Society's representatives were concerned with current issues in education for the professions and accrediting policies and procedures.

Texans Hear Korstian

Over 100 Texas members of the Society of American Foresters gathered in Lufkin on March 18 to hear Dr. C. F. Korstian, dean of the School of Forestry at Duke University, discuss southern silviculture.

Dr. Korstian described the silviculture problems encountered in the pineywoods of East Texas as similar to those existing on the experimental forest of Duke University, in North Carolina. He emphasized the use of proper cutting methods in each individual pine stand to discourage the growth of undesirable hardwoods and encourage the growth of more desirable pines.

Using colored slides of stands of southern pine timber on the experimental forest of Duke University, Dr. Korstian pointed out good and bad forestry procedures. He stated that a knowledge of soil was just as important in growing a tree crop as with any other farm crop.

A question and answer period followed the main portion of Dr. Korstian's address.

Red Pine Book Issued

"Red Pine in New York," a multigraphed publication of papers presented at a recent meeting of the New York Section, is available for distribution at 25 cents per copy. Orders should be placed with David B. Cook, 14 Nolan Road, Albany, N. Y., the Section's secretary-treasurer.

A brief preface states that the papers represent the best information now available on the subject.

Foresters Talk at Engineers' Meeting

Papers by two S.A.F. members were presented at the wood industries technical session of the national meeting of the American Society of Mechanical Engineers on April 14 in Washington, D. C. Carl Rishell gave a survey of postwar developments in wood products research, and Anthony P. Dean presented a paper on "Machines and Forestry."

Under the auspices of A.S.M.E.'s Wood Industries Division, the program was arranged through the cooperation of the Society of American Foresters, Forest Products Research Society, Society of Automotive Engineers, and the American Society of Civil Engineers.

One-third of the persons in attendance were foresters.

An inspection trip to the Timber Engineering Company laboratory was conducted on the preceding day.

Anniversary Seals

Embossed seals bearing a Society emblem and "Golden Anniversary, 50th Annual Meeting, December 13-16, 1950, Washington, D. C." are available at cost to Sections or individual members who wish to attach them to correspondence, newsletters, etc. They are done in green and russet, the official colors of forestry, and have gold lettering and trim.

Prices are $6.00 per lot of 500 seals or $1.50 for 100 seals, and can be ordered direct from the Society office.

Golden Anniversary Meeting Plans Launched By Tri-Host Committees

Plans are underway for staging the biggest meeting ever held by the Society of American Foresters, according to George R. Phillips, general chairman of the meeting. Dates for this fiftieth annual meeting in commemoration of the Golden Anniversary of the founding of the Society are December 13 to 16, 1950. The Mayflower Hotel, Washington, D. C. will be the headquarters for the convention. Attendance in excess of 1,000 is expected.

In appointing Mr. Phillips as general chairman, President Charles F. Evans assigned to him the overall responsibility of making local arrangements and planning the general sessions of the meeting. Mr. Phillips' address is 4712 Harrison Street, Chevy Chase, Md. Assistant general chairmen in charge of local arrangements who represent the three host Sections are: Milton M. Bryan, Washington, D. C. Section; Adna R. Bond, Allegheny Section; and Francis J. Cook, Appalachian Section. Members of the committee to plan the general sessions are Tom Gill, Herbert McKean, H. C. Buckingham, John F. Shanklin, and Edward C. Crafts.

GEORGE R. PHILLIPS

Section delegates and the Council will meet in separate sessions during the morning of December 13, and will hold a joint conference that afternoon.

A general session for all members and guests in attendance will officially open the Golden Anniversary meeting on Thursday morning, December 14.

MILTON M. BRYAN

ADNA R. BOND

The afternoon will be devoted to a Society Affairs session. The evening of Thursday, December 14, has been reserved so that all alumni groups may arrange meetings at that time without conflicting with other Golden Anniversary meeting activities.

Technical sessions of the Subject Divisions have been scheduled for the morning and afternoon of Friday, December 15, with the exception of the Division of Education which will meet on December 13.

Dinner-Dance

The annual banquet will be Friday evening, December 15 and will feature the recognition of leaders of the profession and accomplishments of the Society. Following the dinner there will be a dance for members and guests in the Grand Ballroom at the Mayflower Hotel. J. H. Johnson is in charge of arrangements for the dinner-dance.

The final general session will be on Saturday morning, December 16.

H. R. Josephson has been appointed by the general chairman, George R. Phillips, to head the Information and Welcome sub-committee, which will assemble data about local points of interest, housing and transportation facilities, and will help all those in attendance to enjoy their visit in the capital city. Special emphasis is being given to providing entertainment and information of particular interest to the large number of ladies expected to attend the Golden Anniversary meeting. Mrs. E. N. Munns is the chairman of the Ladies Activities sub-committee.

Other sub-committee chairman already appointed and at work on their respective assignments are: C. W. Mattison, Publicity, and D. E. Hess, Golden Anniversary Favors.

FRANCIS J. COOK

Employment Analysis Shows Industry Increase

One out of every four Society members is employed by industry. There is a smaller proportion of members federally employed than ever before. Members employed by state and federal agencies combined outnumber all other members.

These facts are revealed by an analysis of 3,853 employment questionnaires returned by Society members during the first three months of 1950. Slightly more than 60 percent of the 6,408 members as of January 1, 1950 returned questionnaires.

A comparison of the number of members, classified by employer, for 1934, 1937, and 1950 is presented in Table 1. Thirty-eight percent are now federally employed, considerably less than previously. The proportion of members employed by industry is more than double what is was in 1937 and represents a four-fold increase in actual numbers during the same period. The number of foresters employed by state agencies has more than doubled in the past 13 years, although the proportion of foresters so employed has increased only slightly.

Foresters are now employed by all but three of the executive departments of the U. S. government—State, Post Office, and Labor. Numbers employed by the other departments, according to returned questionnaires are: Treasury—6, National Military Establishment — 32, Justice — 2, Interior—152, Agriculture—1218, Commerce—6, Executive Office of the President and Independent Agencies—38. Agencies employing more than 20 of the members who returned questionnaires, with number and percentage of total federally employed are:

	Number	Percent
National Military Establishment	32	2.2
Bureau of Indian Affairs	46	3.2
Bureau of Land Management	30	2.1
Fish and Wildlife Service	24	1.6
National Park Service	44	3.0
Forest Service	1045	71.7
Soil Conservation Service	89	6.1
Bureau of Entomology and Plant Quarantine	54	3.7
Bureau of Plant Industry, Soils, and Agricultural Engineering	27	1.8
Tennessee Valley Authority	29	2.0

Agencies employing fewer than 20 foresters of the 60 percent who returned questionnaires include: Bureau of Internal Revenue, Department of Justice, Geological Survey, Bonneville Power Administration, Department of Agriculture Library, Extension Service, Farmers Home Administration, Farm Credit Administration, Weather Bureau, Bureau of the Census, Coast and Geodetic Survey, Office of International Trade, Office of Domestic Commerce, Bureau of the Budget, Office for Emergency Management, Atomic Energy Commission, Smithsonian Institution, Office of the Secretary of Agriculture, and Office of Land Utilization in the Department of the Interior. In addition, at least two members are employed by the United Nations and several by the Canadian government.

Table 2 shows the annual income of the Society members returning questionnaires, 60 percent of the total membership. The number in each of five salary brackets, classified by employer, as well as the percentage that number is of the total in each employment classification is shown.

Nearly half of the members federally employed receive salaries between $5,000 and $9,999, but only .9 percent receive over $10,000 annually. In industry 8.0 percent receive salaries of over $10,000, but more industry foresters receive salaries in the $3,500 to $4,999 bracket than in any other. Foresters employed by the states receive the lowest salaries, over 40 percent being below $3,500. The widest range in income was reported by self-employed foresters.

For the Society as a whole, over 70 percent of the members earn between $3,500 and $10,000 with approximately equal numbers in the narrow $3,500 to $4,999 bracket and the wide $5,000 to $9,999 bracket.

TABLE 1.—EMPLOYMENT OF S.A.F. MEMBERS

Employer	1934 (March) Number	1934 (March) Percent	1937 (August) Number	1937 (August) Percent	1950 (January) Number	1950 (January) Percent	1950 Questionnaires returned
Federal	1147	55.25	2516	63.63	2420	37.82	1457
Industry	220	10.60	368	9.30	1560	24.37	939
State	333	16.04	486	12.29	1080	16.90	651
School	246	11.85	307	7.76	550	8.51	328
Self					350	5.42	209
Association	130	6.26	277	7.02	140	2.23	86
Local					80	1.17	45
Unclassifiable					228	3.58	138
Totals	2076	100.00	3954	100.00	6408	100.00	3853[1]

[1] Represents .60128 of total membership on January 1, 1950.

TABLE 2.—ANNUAL INCOME OF S. A. F. MEMBERS
(As of January 1, 1950)

Employer	Questionnaires returned	Income not indicated		Under $2,500		$2,500 to $3,499		$3,500 to $4,999		$5,000 to $9,999		Over $10,000	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Federal	1457	24	1.6	1	0.1	138	9.5	573	39.4	707	48.5	14	0.9
Industry	939	19	2.0	16	1.7	125	13.3	380	40.5	324	34.5	75	8.0
State	651	9	1.4	21	3.2	247	37.9	285	43.8	89	13.7	0	0.0
School	328	5	1.5	20	6.1	37	11.3	126	38.4	134	40.9	6	1.8
Self	209	23	11.0	15	7.2	31	14.8	48	23.0	66	31.6	26	12.4
Association	86	2	2.3	3	3.5	7	8.2	25	29.0	33	38.3	16	18.6
Local	45	2	4.4	1	2.2	13	28.9	19	42.3	9	20.0	1	2.2
Unclassifiable	138												
Totals	3853			77	2.0	598	15.5	1456	37.8	1362	35.3	138	3.6

Section Recommends Minnesota Program

The Upper Mississippi Valley Section held its winter meeting at Grand Rapids, Minn., on March 24 and 25 with Clarence Prout, director of forestry for the Minnesota State Forest Service, as chairman. With over 150 members and visitors present, this proved to be one of the best attended meetings ever held by the Iowa, Minnesota, and North Dakota group. The Northwestern Minnesota Chapter, with Paul St. Amant as chairman, acted as host to the Section.

The main purpose of the meeting was to draw up a forestry program for Minnesota which could be used for the information and guidance of the various agencies concerned with the forestry problems of that state. Individual committees charged with the responsibility of preparing recommendations on all phases of forestry activity reported to the Section on the following topics:

Forest protection—J. A. Mitchell, chairman.

Forestry on state lands—F. H. Kaufert, chairman.

Forestry on county lands—Lynn Sandberg, chairman.

Forestry on industrial lands—J. V. Hoene, chairman.

Forestry on farm lands; nursery and planting needs—Ray Clement, chairman.

Forest survey and inventory, and forest taxation problems—J. H. Allison, chairman.

Forest research and conservation education—T. Schantz-Hansen, chairman.

Community and school forests—J. Ogrine, chairman.

Lively discussion from the floor followed the presentation of the committee reports and recommendations, according to Henry L. Hansen, secretary-treasurer. A committee consisting of Clarence Long, Frank H. Kaufert, Ed Lawson, Z. A. Zasada, and Lynn Sandberg was appointed to organize the Section's recommendations in final form.

Following the banquet at the community church on Friday night, Mr. L. A. Rossman, publisher of the Grand Rapids *Herald Review*, and an ardent supporter of conservation activities, gave a stimulating review of the history of Minnesota's early logging days, present problems in forestry, and the need for boldness and breadth of imagination on the part of professional foresters.

Queries and Quotes

"Can't you, with your editorial prerogatives, authority, etc., use a cleaver or something on these 20-word titles put out by our friends the researchers—JDG

Concise titles are always best. But technical and scientific papers which are permanently indexed for reference, as all Journal articles are, should have titles sufficiently descriptive and complete to provide the essential subject headings for an index or for cross reference on library cards. This does not mean to say that 20-word titles are either necessary or desirable. There are few papers whose titles cannot be adequately stated in seven words or less. The technical writer who takes the time to compose a brief, explicit title will not waste his efforts; moreover, he will please the editor, delight the indexer, and aid the reader.—HC

"We are endeavoring to enroll 100 percent of the professional foresters working in our state."—HSM

They will probably do it, too! Simplified, self-explanatory application and endorsement forms can be had from your Section's membership chairman or from the Society office.—RDH

"Could you advise me if I am qualified for advancement to the grade of Member?"—DCB

Junior Members who have had at least three years of qualifying forestry experience since they first became eligible for the Junior grade of membership are eligible to apply for advancement if they are currently engaged in forestry work. Applications for advancement, supported by three statements of endorsers, should be filed with the Section's membership chairman for consideration by the Section. Applications endorsed by the Section are forwarded to the Council for final action. Names and addresses of Section membership chairmen are listed elsewhere in this issue.—RDH

Dues Lower Than in Most Professional Societies

A recent study of the dues of professional organizations reveals that those of the Member grade in the Society of American Foresters are lower than for comparable grades in most of the other associations. In addition, an entrance or advancement fee is assessed in several other organizations while none is required by the Society, except the $5.00 assessment made upon original election to one of the entrance grades. The accompanying Table I shows the dues of the organizations studied.

TABLE I.—DUES OF THE GRADE OF MEMBER IN TEN PROFESSIONAL ORGANIZATIONS APRIL 1950

	Entrance fee for Member grade	Minimum dues for Member grade	Maximum dues for Member grade	Years to reach maximum
	Dollars			
1. Society of American Foresters.	0	12	15	6
2. American Society of Civil Engineers.	30	20–25	20–25	—
3. American Society of Mechanical Engineers.	25	20	20	—
4. American Institute of Electrical Engineers. (Grade of Fellow corresponds to SAF Member grade).	20	20	20	—
5. American Institute of Mining & Metallurgical Engineers.	20	15	15	—
6. American Society of Heating & Ventilating Engineers.	10	25	25	—
7. American Veterinary Medical Association. (Am. Journal of Veterinary Research, $2.50 extra).	5	10	10	—
8. American Bar Association.	0	3	12	5
9. American Chemical Society. (Publications, $16 extra per year.)	0	9	9	—
10. American Institute of Accountants.	10	10	30	6

Section Officers

(As of May 22, 1950. Dates terms began are given.)

Allegheny Section

2-17-50

J. Ira Kolb, Chairman
Parvin State Park, R. D. 1, Elmer, N. J.

M. K. Goddard, Vice Chairman
Pennsylvania State Forest School, Mont Alto, Pa.

J. H. Mendenhall, Secretary-Treasurer
405 F & M Building, West Chester, Pa.

M. K. Goddard, Membership Chairman
Pennsylvania State Forest School, Mont Alto, Pa.

Chapters: 1. New Jersey
2. Philadelphia
3. West Virginia

Appalachian Section

1-22-50

A. E. Wackerman, Chairman
School of Forestry, Duke University, Durham, N. C.

Theodore Davis, Vice Chairman
Forestry Department, Champion Paper & Fibre Co., Canton, N. C.

P. A. Griffiths, Secretary-Treasurer
Department of Conservation and Development, Raleigh, N. C.

Theodore Davis, Membership Chairman
Forestry Department, Champion Paper & Fibre Co., Canton, N. C.

Chapters: None

Central Rocky Mountain Section

11-3-49

J. L. Deen, Chairman
Colorado A & M College, Fort Collins, Colo.

Ralph R. Hill, Vice Chairman
U. S. Forest Service, Post Office Building, Denver 2, Colo.

E. G. Dunford, Secretary-Treasurer
Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.

Warren M. Tracy, Membership Chairman
U. S. Forest Service, Post Office Building, Denver 2, Colo.

Chapters: 1. Black Hills

Central States Section

10-27-49

Roy Brundage, Chairman
Department of Forestry, Purdue University, Lafayette, Ind.

Warren W. Chase, Vice Chairman
University of Michigan, Ann Arbor, Mich.

Charles S. Walters, Secretary-Treasurer
219 New Agriculture Building, Urbana, Ill.

Warren W. Chase, Membership Chairman
University of Michigan, Ann Arbor, Mich.

Chapters: 1. Illinois Technical Forestry Association
2. Indiana
3. Lower Michigan
4. Ohio

Columbia River Section

6-17-49

E. L. Kolbe, Chairman
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Kermit W. Linstedt, Vice Chairman
U. S. Forest Service, Post Office Building, Portland, Oreg.

Richard C. Wilson, Secretary
423 U.S. Court House, Portland, Oreg.

Albert Wiesendanger, Treasurer
Box 471, Salem, Ore.

L. O. Barrett, Membership Chairman
801 West 8th Street, Vancouver, Wash.

Chapters: 1. Central Oregon
2. Hawaii
3. Longview
4. Portland
5. Shasta-Cascade
6. Siskiyou
7. Umpqua-Coquille
8. Willamette

Gulf States Section

11-14-49

J. H. Kitchens, Jr., Chairman
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W. M. Palmer, Jr., Vice Chairman
Box 168, Natchitoches, La.

J. W. Myers, Jr., Secretary-Treasurer
Box 894, Baton Rouge, La.

W. M. Palmer, Jr., Membership Chairman
Box 168, Natchitoches, La.

Chapters: 1. Fort Worth-Dallas
2. Houston-Huntsville-College Station
3. Jackson
4. Longleaf
5. Lufkin-Nacogdoches
6. North Louisiana
7. North Mississippi
8. Southeast Louisiana
9. Southwest Louisiana
10. Southwest Mississippi

Inland Empire Section

5-20-50

M. M. Mosher, Chairman
Department of Forestry, Washington State College, Pullman, Wash.

Earl Ritzheimer, Vice Chairman
Potlatch Forests, Inc., Bovill, Idaho

George Weyerman, Secretary-Treasurer
U. S. Forest Service, Orofino, Idaho.

R. T. Bingham, Membership Chairman
B.R.C., Realty Building, Spokane, Wash.

Chapters: None

Intermountain Section

5-6-49

Lincoln Ellison, Chairman
Intermountain Forest and Range Experiment Station, Ogden, Utah

George H. Kelker, Vice Chairman
School of Forestry, Utah State Agricultural College, Logan, Utah

Odell Julander, Secretary-Treasurer
Intermountain Forest and Range Experiment Station, Ogden, Utah

James M. Hockaday, Membership Chairman
U. S. Forest Service, Ogden, Utah

Chapters: None

Kentucky-Tennessee Section

-49

J. O. Artman, Chairman
Division of Forestry Relations, Tennessee Valley Authority, Norris, Tenn.

Maxwell MacMaster, Vice Chairman
Stanley, Inc., Pulaski, Tenn.

F. Henry Sipe, Secretary-Treasurer
Winchester, Tenn.

Maxwell MacMaster, Membership Chairman
Stanley, Inc., Pulaski, Tenn.

Chapters: None

New England Section

2-24-50

William C. McAdam, Chairman
Francestown, N. H.

R. S. Monahan, Vice Chairman
Hanover, N. H.

Edwin L. Giddings, Secretary-Treasurer
Penobscot Development Co., Great Works, Me.

R. S. Monahan, Membership Chairman
Hanover, N. H.

Chapters: None

New York Section

12-10-49

Albert J. Woodford, Chairman
Box 84, Herkimer, N. Y.

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Chapters: None.

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12-15-49

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8-26-49

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Henry Clepper

Candidates for Membership

Candidates for membership whose applications were received in the Society office prior to May 1, 1950 are listed below. Names, positions, addresses, education, and endorsers are given.

Action regarding the eligibility of these candidates will be taken by the Council as of July 1, 1950. Comments, protests, or important information regarding the qualifications for membership of candidates listed are invited from present voting members. All such communications are kept strictly confidential, being used only by the Council in taking final action on applications. Correspondence should be received in the Society office prior to July 1, 1950.

The names of those candidates who are elected will be published in the Society Affairs department of the August 1950 JOURNAL OF FORESTRY. The names of those who signify their acceptance of election will be published in subsequent issues of the Journal.

Allegheny Section

Junior Grade

Brown, R. T., Box 202, Romney, W. Va.; W. Va. Univ., B.S.F., 1949. R. H. Hansen, P. E. Packer, J. Kittredge.

Costley, R. J., Forest Supv., U.S.F.S., Warren, Pa.; Utah State, B.S., (Forestry), 1935; Univ. of Illinois, M.S., 1942. Allegheny.

Eberhard, T. T., Langhorne, Bucks County, Pa.; Pa. State, B.S.F., 1949. V. Beede, O. A. Schmidt, H. H. Chisman.

Enright, L. J., Private Consultant, P. O. Box 602, State College, Pa.; Pa. State, B.S.F., 1949; M.F., 1950. W. E. White, H. H. Chisman, H. N. Cope.

Hutnik, R. J., Forestry Aid, N. E. Forest Exp. Sta., Harrisburg, Pa.; Pa. State, B.S.F., 1950. M. R. Goddard, W. W. Ward, O. Pflueger.

Jefferson, H. H., Forester, American Pulpwood Assoc., N. Y., N. Y. Allegheny.

Switzer, G. L., 456 Florida Ave., Chester, W. Va.; W. Va., B.S.F., 1949; Yale, M.F., 1950. H. H. Chapman, E. V. Zumwalt, H. J. Lutz.

Williams, G. H., East Ave., Mullica Hill, N. J.; N. Y. State, B.S.F., 1950. G. E. Smith, J. C. Sammi, S. O. Heiberg.

Appalachian Section

Junior Grade

Bernard, J. B., Jr., Asst. Dist. Forester, Div. of Forestry, Raleigh, N. C.; N. C. State, B.S.F., 1949. B. H. Corpening, H. R. Price, R. Vogenberger.

Geddes, R. B., Service Forester, Va. Forest Service, Salem, Va.; N. C. State, B.S.F., 1948. S. A. Hobart, W. F. Custard, J. B. Heltzel.

Harper, J. P., Draftsman, Int. Paper Co., Georgetown, S. C.; N. C. State, B.S.F., 1949. C. M. Kaufman, J. V. Hofmann, R. J. Preston.

Reynolds, E. E., Forester, Va. Forest Service, Salem, Va.; Iowa State, B.S.F., 1949. S. G. Hobart, W. F. Custard, J. B. Heltzel.

Member Grade

Spain, W. W., Mgr., J. G. Howard Lbr. Co., Varnville, S. C.; Univ. of Mich., B.S.F., 1938. Reinstatement.

Affiliate Grade

Hale, C. H., Cruiser, Riverside Mfg. Co., Murfreesboro, N. C.; N. C. State, (1 yr.). Appalachian.

Central Rocky Mountain Section

Junior Grade

Sobel, H. S., Forestry Aid, U.S.F.S., Delta, Colo.; N. Y. State, B.S.F., 1950. S. O. Heiberg, J. C. Sammi, J. W. Barrett.

Central States Section

Junior Grade

Borgerson, H. V., Dist. Forester, Mich. Dept. of Cons., Roscommon, Mich.; Mich. State, (2½ yrs.). Central States.

Cline, S. A., Regional Forester, Mich. Dept. of Cons., Lansing, Mich. Central States.

Fritsch, L. A., Supt., Owen State Forest, Indiana Div. of Forestry, Brazil, Ind.; Purdue, B.S.F., 1949. R. W. House, A. M. Herrick, R. C. Brundage.

Frye, J. R., P. O. Box 282, Wayne, Mich.; Mich. State, B.S.F., 1950. P. W. Robbins, K. Dressel, H. A. Stoehr.

Hamalainen, E. H., Asst. Mgr., Harbor Woodcraft Co., Harbor Spring, Mich.; Mich. Tech., B.S., (Forestry), 1949. Central States.

Hart, S. G. V., Grad. Student, Univ. of Mich., Ann Arbor, Mich.; Univ. of Mich., B.S.F., 1950. J. F. Dubuar, K. P. Davis, S. W. Allen.

Martyn, W. D., Maple Lane, Aurora, Ohio; Yale, B.S., 1948; M.F., 1950. H. H. Chapman, W. H. Meyer, E. V. Zumwalt.

Pakula, A. C., Grad. Student, Univ. of Mich., Ann Arbor, Mich.; Univ. of Mich., B.S.F., 1949. S. T. Dana, S. W. Allen, W. W. Chase.

Place, W. T., Research Forester, Central States Forest Exp. Sta., Columbus, Ohio; Iowa State, B.S.F., 1948. R. W. Merz, R. N. Gaiser, R. F. Finn.

Steere, R. B., Box 168, Akron, Ohio; N. Y. State, B.S.F., 1950. D. P. White, S. O. Heiberg, C. E. Farnsworth.

Trickel, J. W., Intermountain Lbr. Co., Missoula, Mont.; Mont. State, B.S.F., 1950. T. A. Walbridge, Jr., P. E. Bruns, D. William.

Youngblood, E. F., Forester, U.S.F.S., Columbus, Ohio; Pa. State, B.S.F., 1948. R. E. Doyle, M. E. Becker, E. Roberts.

Associate Grade

Laybourne, W., Exec. Secretary, Ohio Forestry Assoc., Columbus, Ohio; Ohio State, B.S., (Agric. Ed.), 1939. Central States.

Columbia River Section

Junior Grade

Jefferies, G. K., Fire Control Aid, U.S.F.S., Lakeview, Oreg.; Oregon State, B.S.F., 1950. G. H. Barnes, R. F. Keniston, W. F. McCulloch.

Lewis, F. E., Dist. Asst., U.S.F.S., Vancouver, Wash.; Univ. of Wash., B.S.F., 1949. L. O. Barrett, C. E. Brown, C. F. Ritter.

Steig, G. G., Scaler, Weyerhaeuser Tbr. Co., Longview, Wash.; Iowa State, B.S.F., 1942. J. M. Hisey, J. D. Prater, E. A. Erickson.

Wolf, M. F., Fire Control Aid, U.S.F.S., John Day, Oreg.; Oregon State, B.S.F., 1950. G. H. Barnes, R. F. Keniston, W. F. McCulloch.

Member Grade

Slattery, J. E., Dist. Forester, Bur. of Land Mgmt., Roseburg, Oreg.; Univ. of Wash., B.S.F., 1931; M.F., 1932. Reinstatement.

Gulf States Section

Junior Grade

Hulett, A. D., Jr., Asst. Forester, Lutcher and Moore Lbr. Co., Wiergate, Texas; La. State, B.S.F., 1950. A. B. Crow, R. W. Hayes, W. M. Palmer.

Johnson, L. R., Forester, U.S.F.S., Laurel, Miss.; Mich. State, B.S.F., 1949. P. A. Herbert, K. Dressel, P. W. Robbins.

Norman, D. R., 2130 5th Ave., Laurel, Miss.; Montana State, B.S.F., 1950. R. Williams, C. W. Waters, T. A. Walbridge, Jr.

Vick, H. M., Forester, Kellogg Lbr. Co., Monroe, La.; La. State, B.S.F., 1948. J. H. Kitchens, E. T. Wall, J. I. Ritchie.

Member Grade

Blake, J. W., 1011 Noble, El Paso, Texas. Gulf States (Jr. member, 1943).

Cooper, J. W., Box 1849, Jackson, Miss. Gulf States. Reinstatement.

Hottle, W. D., 3501 DeSiard St., Monroe, La. Gulf States (Jr. member, 1936).

King, W. W., 907 S. 2nd St., Lufkin, Texas. Gulf States (Jr. member, 1944).

Mackay, D. E., General Delivery, Springhill, La. Gulf States (Jr. member, 1944).

Marsh, G. R., Masonite Corp., Forestry Dept., Laurel, Miss. Gulf States (Jr. member, 1944).

McKillips, R. L., Box 550, Minden, La. Gulf States (Jr. member, 1942).

Phillips, W. T., Box 85, Merryville, La. Gulf States (Jr. member, 1942).

Summers, J. H., Walls, La. Gulf States (Jr. member, 1941).

Thomas, W. P., 916 North Main St., Homer, La. Gulf States (Jr. member, 1944).

Affiliate Grade

Conerly, C. S., Asst. Secretary and Asst. Mgr., Pine Forests Co., Poplarville, Miss. Gulf States.

Inland Empire Section

Junior Grade

Hicks, G. W., Forestry Aid, U.S.F.S., St. Maries, Idaho; Univ. of Idaho, B.S., (Forestry), 1950. D. R. Kyle, E. W. Smith, W. H. Welton.

Member Grade

Harlan, G. W., 1914 Eleventh Ave., Lewiston, Idaho. Inland Empire (Jr. member, 1943).

Kentucky-Tennessee Section

Junior Grade

Gates, P. J., Wood Procurement and Field Representative, Mead Corp., Kingsport, Tenn.; Univ. of Mich., B.S.F., 1948; M.F., 1948. W. W. Chase, S. W. Allen, S. T. Dana.

New England Section

Junior Grade

Bork, J. H., Jr., Forester, N. H. Forestry & Recreation Comm., Concord, N. H.; N. Y. State, B.S.F., 1942; Univ. of Mich., M.F., 1947. Reinstatement.

Morrill, G. W. Jr., Consulting Forester, Concord, N. H.; Univ. of Maine, B.S.F., 1935. Reinstatement.
Nordin, V. J., Officer in Charge, Dom. Lab. of Forest Pathology, Fredericton, N. B.; Univ. of B. C., B.S., (Forestry), 1947. New England.

New York Section

Junior Grade

Williams, R. A., 80 Waller Ave., White Plains, N. Y.; Univ. of Mass., B.S., (Forestry), 1948; Yale, M.F., 1950. H. H. Chapman, W. H. Meyer, E. V. Zumwalt.

Northern California Section

Junior Grade

Geis, A. F., 6451 Bellaire Ave., North Hollywood, Calif.; Mont. State, B.S.F., 1950. R. Williams, F. E. Bruns, T. A. Walbridge, Jr.
Leatherman, R. L., Chairman, McCloud River Lbr. Co., McCloud, Calif.; Univ. of Calif., B.S.F., 1949. M. Krueger, B. N. Colwell, P. M. Barr.

Affiliate Grade

Schuckert, E., Asst. State Forest Rgr., Div. of Forestry, Camino, Calif. Northern California.

Northern Rocky Mountain Section

Junior Grade

Ammann, E. M., 738 E. Front St., Missoula, Mont.; Mont. State, B.S.F., 1950. R. Williams, F. G. Clark, K. E. Moore.
Dahl, J. M., 9 Lake St., Missoula, Mont.; Mont. State, B.S.F., 1950. F. G. Clark, T. A. Walbridge, Jr., K. E. Moore.
Damon, R. W., Box 876, Libby, Mont.; Mont. State, B.S.F., 1950. R. Williams, F. G. Clark, C. W. Waters.
Gillespie, R. E., Box 713, Libby, Mont.; Mont. State, B.S.F., 1950. R. Williams, F. G. Clark, T. A. Walbridge, Jr.
Luger, J. L., 4 Lake St, Missoula, Mont; Spaulding, F. G. Clark, K. E. Moore.
ONeil, C. H., Vice Pres., Forest Products Inc., Kalispell, Mont.; Mont. State, B.S., (Forest Engr.), 1932. W. H. Ibenthal, S. H. Larson, I. V. Anderson.
Rice, C. D., 415 Brooks St., Missoula, Mont.; Mont. State, B.S.F., 1950. P. E. Bruns, C. W. Waters, T. A. Walbridge, Jr.
Sieminski, J. S., Student, Montana State, Missoula, Mont.; Mont. State, B.S.F., 1950. R. Williams, C. W. Waters; F. G. Clark.
Smith, D. C., Research Forester, Northern Rocky Mt. Forest and Range Exp. Sta., Missoula, Mont.; Mont. State, B.S.F., 1947. M. C. Riley, H. J. Faulkner, R. T. Bingham.
Standiford, A. A., 438 McLeod Ave., Missoula, Mont.; Mont. State, B.S.F., 1950. R. Williams, C. W. Waters, T. C. Spaulding.
Wheeler, D. H., 5 Flathead St., Missoula, Mont.; Mont. State, B.S.F., 1950. R. Williams, F. G. Clark, T. A. Walbridge, Jr.
Weir, L. R., 1640 S. 8th St., Missoula, Mont.; Mont. State, B.S.F., 1950. K. E. Moore, T. C. Spaulding, P. E. Bruns.

Ozark Section

Junior Grade

Gallaher, H. G., Asst. County Ext. Agent, Extension Service, Univ. of Mo., Salem, Mo.; Univ. of Mo., B.S., (Forestry), 1949. Ozark.
Karow, K. F., Forester, U.S.F.S., Houston, Mo.; Univ. of Minn., B.S.F., 1939. Reinstatement
Nelson, A. L. C., Asst. Forester, Crossett Lbr. Co., Crossett, Ark.; Yale, B.S., 1948; M.F., 1950. H. H. Chapman, W. H. Meyer, E. V. Zumwalt.

Puget Sound Section

Junior Grade

Murray, L. T., Jr., Forester, West Fork Tbr. Co., Tacoma, Wash.; Yale, B.S., 1946; Univ. of Wash., M.F., 1949. E. F. Henccx, C. S. Martin, A. J. Brandstrom.

Southeastern Section

Junior Grade

Bates, W. H., P. O. Box 334, Altoona, Fla.; Univ. of Fla., B.S.F., 1950. J. W. Miller, E. A. Ziegler, C. G. Geltz.
Hoffman, G. C., Forester, U.S.F.S., Tallahassee, Fla.; Cornell Univ., B.S., (Forestry), 1929. Reinstatement.
Johnson, J. C., Grad. Student, Univ. of Fla., Gainesville, Fla.; Univ. of Fla., B.S.F., 1950. H. S. Newins, C. G. Geltz, E. A. Ziegler.
Schaeffner, J. F., 1139 W. McCormick St., Gainesville, Fla.; Univ. of Fla., B.S.F., 1950. H. S. Newins, C. G. Geltz, P. W. Frazer.
Turner, E. R., Area Mgr., Macon Kraft Co., Macon, Ga.; Univ. of Ga., B.S.F., 1947. F. E. Stabler, N. R. Harding, H. B. Mathias.

Southwestern Section

Junior Grade

Pickett, G. S., Forester, U.S.F.S., Grants, N. Mex.; Univ. of Wash., B.S.F., 1948. J. A. Egan, N. P. Weeden, A. A. McCutchen.

Upper Mississippi Valley Section

Junior Grade

Jamrock, E. A., Forest Rgr., Iron Range Resources and Rehabilitation, St. Paul, Minn.; Univ. of Minn., B.S.F., 1949. L. Sandberg, C. B. Buckman, G. Rogoshesko.
Johnson, H. B., Forest Rgr., Iron Range Resources and Rehabilitation, Hibbing, Minn.; Univ. of Minn., B.S.F., 1949. L. Sandberg, J. Chern, J. M. Kittelson.
Loerch, K. A., 2531 Pleasant Ave., Minneapolis, Minn.; Iowa State, B.S.F., 1948; Univ. of Minn., M.S., 1950. Y. Weinstein, F. H. Kaufert, W. W. Talbert.
Sullivan, G. J., Field Agent, Bur. of Entomology and Plant Quarantine, Duluth, Minn.; Univ. of Minn., B.S.F., 1949. S. B. Olson, H. L. Sundling, David N. Kee.

Member Grade

Hosfield, R. W., Forester, Iron Range Resources and Rehabilitation, Hibbing, Minn.; Univ. of Minn., B.S.F., 1941. Upper Mississippi Valley, (Jr. member, 1942).
Veghein, B. O., Dist. Forester, Minn. and Ontario Paper Co., International Falls, Minn.; Univ. of Minn., B.S.F., 1928. Upper Mississippi Valley (Jr. member, 1937-46).

Wisconsin-Upper Michigan Section

Junior Grade

Tappon, M. T., Forester Photo Interpreter, Cons. Dept., Tomahawk, Wis.; Univ. of Mich., B.S.F., M.F., 1949. S. W. Welsh, E. F. Steigerwaldt, W. A. Sylvester.
Walker, F. R., Munising Wood Products Co., Inc., Munising, Mich.; Univ. of Mich., B.S.F., 1941. Reinstatement.
Winner, L. B., Forester, U. S. Indian Service, Keshena, Wis.; Univ. of Minn., B.S.F., 1943. W. Heritage, J. W. Libby, W. J. Ridlington.

Affiliate Grade

Fowler, S. J., Forest Guard, Menominee Indian Mills, Neopit, Wis. Wisconsin-Upper Michigan.

Candidates Elected

The following persons were elected to the indicated grades of membership by the Council on May 1, 1950.

Junior Grade

Anderson, L. H.
Anderson, M. G.
Ayers, J. H.
Bailey, J. H.
Barber, J. C.
Barber, T. F.
Berthy, H. P.
Birch, R. E.
Bivens, J. J.
Bremer, R. H.
Brewster, P. H., Jr.
Broomall, C. O.
Brown, C. C.
Burke, R. E.
Cantrell, J. O.
Carpenter, H. H.
Cech, F. C.
Compton, L. M. (re)
Cuppett, D. G.
Datena, J. F.
Day, E. V. (re)
Dellinger, H. C.
Dick, D. L.
Dudley, B. L.
Dunn, D. B.
Duvall, T. C.
Elias, A. J.
Eskenazi, J.
Eversole, K. R.
Faulkner, C. R.
Ferguson, B. M.
Fisher, G. D.
Fleishman, W. J.
Fletcher, H. C.
Follett, G. L.
Forister, T. E.
Forsyth, H. F.
Gravely, J. A.
Green, E. C.
Gregory, A. H.
Griffith, R. D. (re)
Grubo, A. G.
Hallgren, A. R.
Hankinson, T. B.
Harris, A. R.
Hatch, W. A.
Heintzberger, H.
Hendricks, F. P.
Hermes, H. G.
Hiner, J. M.
Hoag, R. F.
Horney, H. E.
Hunter, H. C. A.
Hyatt, W. G.
Ingham, M. B.
John, L. E.
Johns, H. R.
Johnson, W. F.
Jones, T. W.
Joslyn, G. E.
Kalweit, E.
Kennedy, F. X.
King, R. H.
Kovatch, J. G.
Kutnck, J. N.
Lampe, H. C.
Landenberger, C. F.
Lathrup, D. E.
Leach, E. R.
Lemaire, R. J.
Listenberger, F. L.
Logan, J. F.
Longwell, J. R.
Lopardo, F. A.
Luckinbill, A. L. (re)
Lyman, J. R.
Lynch, D. G.
Madden, R. C.
Manuel, G. E.
Margrave, F. N., Jr.
Marsden, L. G.
Masse, K. D.
McCombs, R. N.
McNair, J. W.
Miles, W. F.
Mobley, H. E.
Munger, E. L.
Mustian, A. P.
Nagel, D. E.
Nelson, T. C.
Noneman, R. L.
Norcott, K. S.
Norman, K. P.
Nygaard, H. K.
Owen, A. M.
Parker, M. D.
Paulsen, H. A.
Pierce, C. B.
Pusvaskis, P. D.
Ralston, R. A.
Rasmussen, R. M.
Redding, R. L.
Reed, M.
Rees, P. M.
Roberts, D. E.
Roberts, F. J.
Rossman, W. R.
Russ, D. F.
Ruth, G. F.
Sarles, R. L.
Schenk, J. A.
Schick, H.
Simpson, C. M.
Smeltzer, D. A.
Smith, B. J.
Snedaker, R. A.
Staples, W. R.
Stanley, C. T.
Steckel, K. E.
Stevens, T.
Stevens, W. I. (re)
Stiles, H. E.
Strickler, L. C.
Swink, F. N.
Talley, J. R.
Terwilliger, C.
Themar, J. D.
Thomas, W. D.
VanMatre, G. H.
Vorbach, M. J.
Wagle, R. F. (re)
Wagoner, H. E.
Wasser, C. H.
Weeks, W. C.
West, P. M.
White, G.
White, J. B.
White, R. E.
Wismer, R. E.
Woody, A. D.
Wynne, O. T.
Young, K. E.
Zarger, T. G.

Member Grade

Appleby, R. W.
Arnold, C. I.
Baer, H.
Bartholomew, R. J.
Beattie, B.
Benson, R. J.
Bethel, J. S.
Brewer, W. L.
Burma, G. D.
Collins, D. E.
Erickson, H. J.
Griffith, J. W.
Grossenbach, P. A.
Grundman, R.
Heilman, J. F.
Hiatt, H. C.
Hill, W. B., Jr.
Holtby, B. E.
Howard, L. E.
Johnson, W. M.
MacDougall, R. T.
Mehlert, C.
Monroe, A. F.
Morris, E. F.
Nelson, R. E.
Orr, S. W.
Peterson, W. L.
Reed, R. E.
Sindel, G. E.
Stephens, R. V.
Stone, E. C.
Tryner, J. P.
Whittier, D. B.
Winkworth, R. C.
Wright, M. M.
Zauche, W. F., Jr.

Affiliate Grade

Bennett, T. M.
Coffman, R. B.
Gibson, M. C.
Maige, H. R.

Associate Grade

Barracough, S. L.
Gilles, R.
Coleman, D. G.

New Members And Advancements

The new members and members advanced in grade who are listed below are eligible for participation in activities of the Society of American Foresters, including the meetings and projects of Sections, Chapters, Divisions, and Committees. They have submitted their applications for membership, properly endorsed, and have been declared eligible by the Council. By accepting this recognition, these members have indicated their desire to assist the Society in the fulfillment of its objectives.

Allegheny Section

Junior Grade

Steimer, J. T., Dept. of Highways, Franklin, Pa.
Wyckoff, P. J., 115 Spa View Ave., Annapolis, Md.
Zimmerman, J. B., Stoystown, Pa.

Appalachian Section

Junior Grade

Altman, J. A., Elon College, N.C.
Avery, T. E., Duke Station, Durham, N.C.
Broadway, C. A., P. O. Box 1127, Spartanburg, S.C.
Dunn, R. L., Box 172, Woodstock, Va.
East, J. W., Virginia Polytechnic Institute, Blacksburg, Va.
Ennis, J. J., 1446 Calhoun St., Newberry, S.C.
Fromme, J. T., U.S.F.S., Marion, Va.
Hughes, A. L., 2930 Jefferson St., Wilmington, N.C.
Hurlbutt, B., P. O. Box 257, Camden, S.C.
Miller, P. S., Box 226, Franklin, N.C.
St. John, C. H., Jr., International Paper Co., Wilmington, N.C.
Vass, G. R., Moncks Corner, S.C.
Weatherly, J. H., 417 Longstreet St., Kingstree, S.C.

Central Rocky Mountain Section

Junior Grade

Bean, P. W., 926 Clarkson St., Denver, Colo.
Green, D. A., 4165 Sheridan Blvd., Denver, Colo.
Kitchens, J. H., 407 Smith St., Sheridan, Wyo.
Lonsinger, W. F., Box 101, Dolores, Colo.
Meines, M. K., 3641½ South Pierre St., Pierre, S.D.

Central States Section

Junior Grade

BaRoss, R. P., 205 Springfield Hill, East Peoria, Ill.
Grimm, D. K., 7217 Van Buren Ave., Hammond, Ind.
Marlow, C. W., City Hall, Monroe, Mich.
Schoder, T. H., 50 Iroquois Ave., Battle Creek, Mich.

Member Grade

Suddarth, S. K., 231 S. Chauncey St., W. Lafayette, Ind.

Columbia River Section

Junior Grade

Chamard, R. R., U.S.F.S., Prineville, Oreg.
Chase, J. M., 4803 Beveridge Ave., Vancouver, Wash.
Coulter, W. K., 445 U. S. Court House, Portland, Oreg.
Eubanks, W. B., 1615 Norway St., Salem, Oreg.
Henriksen, J. C., Alexander Yawkey Lbr. Co., Prineville, Oreg.
Henshaw, J. F., P. O. Box 61, Butte Falls, Oreg.
Hughes, W. G., c/o Douglas Forest Protective Assoc., Roseburg, Oreg.
Prentice, D. C., 1019 McKinley St., Klamath Falls, Oreg.
Thorpe, L. M., 603 Martin Way, Vancouver, Wash.

Gulf States Section

Junior Grade

Adkins, V. C., Box 358, Good Pine, La.
Barnes, W. W., Box 241, Merryville, La.
Holcombe, E. D., U. S. Soil Cons. Service, Alexandria, La.
McDonald, C. R., Box 137, Bude, Miss.
Oilschlager, E. E., Gaylord Container Corp., Bogalusa, La.

Inland Empire Section

Member Grade

Ravenscroft, V. R., Ext. Service, Univ. of Idaho, Moscow, Idaho.

Intermountain Section

Junior Grade

Hirsch, E. C., U.S.F.S., Vernal, Utah.
Johnson, C. J., Grace, Idaho.

Kentucky-Tennessee Section

Junior Grade

Butcher, G. L., Rt. 2, Mayfield, Ky.
Connelly, J. F., Farm Forester, Box 243, Carthage, Tenn.
Johnson, A. W., Mammoth Cave Natl. Park, Mammoth Cave, Ky.
Long, S. H., Box 152, Lexington, Tenn.
Mauer, B. H., Box 355, Morehead, Ky.
Woods, F. W. Botany Dept., Univ. of Tenn., Knoxville, Tenn.

New England Section

Junior Grade

Brigham, L. H., R.F.D. #10, Boscawen, N.H.
Damon, H. F., Jr., Tamworth, N.H.

Member Grade

Bucciarelli, F. V., Gorham, N.H.
Turner, F. J., County Forester, Brattleboro, Vt.

New York Section

Junior Grade

Lee, G. E., 22 Cherry St., Oneonta, N.Y.

Associate Grade

Perry, H. J., 15 West 47th St., N. Y., N. Y.

Northern California Section

Junior Grade

Bradshaw, R. I., Wolf Creek Tbr. Co., Inc., Rockport, Calif.
Evans, G. G., Hammond Lbr. Co., Samoa, Calif.
Herrala, I. E., Shasta Forests Co., Redding, Calif.
Niles, J. R., Box 31, Roseville, Calif.

Member Grade

McIntyre, R. N., Box 33, Yosemite Natl. Park, Calif.
Ritchie, R. W., c/o Diamond Match Co., Stirling City, Calif.

Northern Rocky Mountain Section

Junior Grade

Fernette, W., 140 University Ave., Missoula, Mont.
Grater, W. C., 511 E. Beckwith, Missoula, Mont.

Ozark Section

Junior Grade

Ashley, B. S., Mansfield, Mo.
Smith, A. B., Box 22, Sheridan, Ark.

Member Grade

Lavely, J. E., 1221 Henderson St., Arkadelphia, Ark.
Lynch, D. B., P. O. Box 668, Pine Bluff, Ark.

Puget Sound Section

Junior Grade

Baris, D. M., U.S.F.S., Neah Bay, Wash.
Flower, L. E., U.S.F.S., Mineral, Wash.
Levin, O. R., 724 Cota St., Shelton, Wash.
Morgan, R. G., 218 S. Francis St., Port Angeles, Wash.
Perrigo, R. A., 4030 Whitman, Seattle, Wash.

Associate Grade

Stevens, J. F., 719 Randolph Place, Seattle, Wash.

Southeastern Section

Junior Grade

Burns, J. G., 616 S. Lawrence St., Montgomery, Ala.
Faris, E. T., Rt. #3, Madison, Ga.
Greene, M. F., Univ. of Georgia, Athens, Ga.
Jamison, L. W., W. T. Smith Lbr. Co., Inc., Chapman, Ala.
Martin, R. W., Jr., Box 141, Thomson, Ga.
Parnell, C. W., Agric. Hill Station, Athens, Ga.
Sheppard M. H., Box 423, Starke, Fla.
Smith, J. L., Campus Station, Athens, Ga.
Thigpen, V. G., 17 W. Gordon St., Savannah, Ga.
Thompson, W. P., P. O. Box 86, McRae, Ga.

Affiliate Grade

Suttle, J. R., Vredenburgh, Ala.

Southwestern Section

Member Grade

McDuff, C. E., U.S.F.S., Albuquerque, N. Mex.
Perry, E. W., P. O. Box 8, Glenwood, N. Mex.
Wild, P. D., U.S.F.S., Mimbres, N. Mex.

Upper Mississippi Valley Section

Junior Grade

Juntilla, H. W., 3142 South Lyndale, Minneapolis, Minn.

Washington, D.C., Section

Member Grade

Dodd, J. B., 9021 Sudbury Rd., Silver Spring, Md.

Wisconsin-Upper Michigan Section

Junior Grade

Boehme, K. R., Kaukauna, Wis.
Davis, C. N., Box 548, Mosinee, Wis.
Reinke, M. E., Box 148, Chippewa Falls, Wis.
Smith, D. M., U. S. Forest Products Lab., Madison, Wis.

Member Grade

Ridlington, W., Box 376, Shawano, Wis.

Associate Grade

Zimmerman, F. R., 4110 Birch Ave., Madison, Wis.

Foreign

Junior Grade

Cole, W. H., 13 Taft St., Santurce, Puerto Rico.

Forestry News

U. S. Board Reports on a Forest Grazing Situation

The National Forest Board of Review has completed its study of the grazing situation on the Roosevelt National Forest in Colorado made as a result of disputes about grazing matters. Some of the questions there are similar to questions that sometimes arise about grazing on national forests elsewhere.

The board stated: "This is an extremely difficult time in which to make major adjustments in allotments of livestock on the Forest because of high prices and high profit possibilities in the livestock industry. There is on the Roosevelt Forest an accumulation or back-log of needed adjustments that might have been made gradually over a period of years, with general acceptance, had not World War II intervened, followed by continued high prices. In general your Board recognizes the acute need of adjustments and the necessity for cuts in allotments on much of the Forest, but recommends a careful consideration of these adjustments with the view towards spreading major reductions, to achieve moderate grazing, over a period of more than three years, possibly five years, and eliminating all livestock only in very limited areas where extremely steep topography, eroding soil, and lack of vegetation make such action imperative to safeguard water and soil resources."

It was recommended that the Forest Service secure full cooperation of sportsmen's associations and state game officials in working out a positive program to control wildlife population, looking toward a proper balance between game animals and domestic livestock.

The board recommended promoting better crop and forage production on private lands of permittees, especially where national forest allotment cuts are necessary, and a more aggressive effort by the Forest Service to keep the public fully informed.

"More federal funds for improvement of range facilities would increase the productiveness of the range in some districts," the report said.

According to the report, limitation of timber cutting practices on lands with high watershed value might involve elimination of all cutting on critical areas and requiring selective cutting and protection of soil cover by careful logging practices on all areas.

Izaak Walton League Calls for Cutting Practices Regulations

At its 28th annual conference, held in Des Moines, Iowa, March 23 to 25, the Izaak Walton League of America, Inc. passed a resolution urging upon "every state now without a forest cutting control act, the enactment of such legislation and the strengthening of such laws as may exist and which are not now workable," and recommending "that unless such laws are passed within a reasonable time, serious consideration be given by Congress to withhold federal assistance to the forestry programs of the states failing to enact appropriate cutting regulations."

Progress Noted in Land Conservation

Substantial progress in the broad field of conservation in fiscal year 1949 is noted by the Office of Land Utilization in its annual report to the Secretary of the Interior.

Land management agencies of the department are faced with a wide variety of complex soil problems in parks, reservations, refuges, public domain, reclamation lands, and in widely scattered areas, the report states. Soil conservation treatment has been applied to about 22 million acres, a small part of the 134 million acres now seriously depleted and for which detailed conservation plans have been made. Out of the total of 282 million acres of public and Indian land only about 60 million are reasonably safe for the future.

The best annual forest fire control record for the department as a whole was achieved during the past fiscal year when only 0.08 percent of the total area requiring protection was burned. Continued improvement is essential to good timber management. Equally important is the control of insects and diseases. During the year 5 million Ribes bushes were destroyed. In the fiscal year 1949, forests of the department produced 1,134,000,000 board feet of timber valued at more than 10 million dollars.

Threats to National Parks Averted

Newton B. Drury, director of the National Park Service, in his annual report calls attention to several notable instances, during the year that ended last July 1, in which threats to the landscape of the national parks were averted. Of foremost importance was the joint decision of the Department of the Army and the Department of the Interior to drop the Glacier View Dam project in Montana from plans for development of the Columbia Basin. This would have flooded nearly 20,000 acres of wilderness in Glacier National Park.

Other examples included the department's adverse decision on the proposed Kaibab Tunnel, in Arizona, which would have diverted from the Grand Canyon virtually the entire flow of the Colorado River; and the decision of the Bureau of Reclamation to run its Granby pumping plant power by cable through the Alva B. Adams tunnel, through the Rockies, rather than disfigure Rocky Mountain National Park with a tower transmission line.

Moessner in Japan

General MacArthur's headquarters in Japan has obtained the temporary services of Karl E. Moessner, supervisor of the Photo Interpretation Section of the Central States Forest Experiment Station.

An expert in forest research involving the use of aerial photographs, Mr. Moessner will devote four months to this assignment. His job will be to design and institute aerial survey sampling techniques for the forests of the Ryukyu Islands. His duties will also include training selected local foresters in aerial survey methods.

New Chairman of Parks Board

Charles G. Sauers, superintendent of the Cook County Forest Preserve, in Illinois, has been elected chairman of the Advisory Board on National Parks, Historic Sites, Buildings and Monuments. He succeeds Dr. Waldo G. Leland, of Washington, D. C., former director of the American Council of Learned Societies, who has been chairman for the last four years.

Bureau of Land Management Reports 1949 Progress

The Bureau of Land Management's 1949 Annual Report shows that more than 37 million dollars were collected last year by the bureau from administration of the public lands. This is the largest amount collected in the bureau's history.

Formed in 1946, through the consolidation of the General Land Office and the Grazing Service, this agency has primary responsibility for administering approximately 180 million acres of public land in the continental United States and 290 million acres in Alaska. In addition, it is responsible for the leasing of minerals on most federally owned lands, totalling 700 million acres, and on about 50 million acres of privately owned lands, in which the United States has mineral rights.

Increased revenue from public lands, the report shows, though due in part to higher prices, has actually resulted from greater use of the public lands. Petroleum production on the public domain has trebled between 1933 and 1949. Natural gas production has more than doubled in the same period. The total of 31,000 applications filed for land use in 1949 is more than three times the 9,000 which were filed in 1940.

There are approximately 28 million acres of public domain timberland and woodland in the states. In addition, the Bureau of Land Management has special timber management problems on 125 million acres of forested public land in Alaska and in the 2.5 million acres of Oregon and California revested railroad grant lands in western Oregon. Total timber resources in the public domain of the United States, other than woodlands, have been estimated as having a present market value between 50 and 100 million dollars.

Grazing Study Planned On Roosevelt National Forest

Additional range and watershed management studies will be conducted on the Roosevelt National Forest in Colorado this summer. The study will be conducted by a group of range and watershed specialists headed by Elbert H. Reid of the Washington office of the Forest Service.

Last summer the Secretary of Agriculture asked the National Forest Board of Review (now renamed National Forest Advisory Council) to make a general study of the range and watershed situation on the Roosevelt Forest.

Tennessee-Alabama Property To be Managed by Forester

Harry Lee Carter, Texas business man, is starting a program looking to full development and utilization of natural resources on 50,000 acres of land in Franklin County, Tenn. and Jackson County, Ala. The property, which is over 95 percent timberland, was formerly owned by Davis-Hixon-Green Lumber Company. A cruise indicates there is over 50 million board feet of merchantable timber on the tract.

Alexander L. Setser, Norris Tenn., formerly with TVA and the Blue Grass Cooperage Company of Louisville, Ky., will serve as resident manager and forester. Mr. Setser is a native of North Carolina, and a forestry graduate of N. C. State College.

The Lakeview Properties, as the tract is locally known, represents one of the largest blocks of merchantable timberland left in Tennessee and Alabama. As a step towards long-term sustained yield management, a system of fire control will be worked out in cooperation with other landowners, the counties, and the states. A systematic program of selective timber harvesting and utilization will be developed. A program of game and fish propagation and protection will be an important phase of the project. Two lakes on the area are fed by artesian springs. A part of the general program is to develop the recreational possibilities of the Lakeview area.

Agricultural rehabilitation will be undertaken in cooperation with state and federal agencies. In selecting applicants to fit into this development, particular interest will be shown to veterans who are eligible for G.I. benefits.

Improved Packing Nut On Indian Pump

D. B. Smith & Co. of Utica, N. Y. announce an improvement in the Indian Fire Pump. The gland packing nut has been changed to a female instead of a male thread so it screws on the outside of the cylinder. New nut is known as FO-15 Gland Packing Nut. The old style was F-15.

When the old style nut was screwed down tight to prevent leaks it made the pump work too hard, and when the pump was taken apart and reassembled the soft packing caught on the inside threads of the cylinder.

The new nut has almost three times the threaded grip surface of the old style.

Forester Killed In Plane Crash

Donald G. Lauridson, a Junior Member, Central Rocky Mountain Section, was killed instantly in a tragic plane accident near Mecker, Colo., on March 23. The crash occurred in the rugged White River Plateau, 70 miles east of the Little Hills Games Experiment Station, his official headquarters. He was counting elk when a down draft caught the plane under circumstances similar to those that caused the death of Orange Olson in 1945. The pilot, Kenneth Milyard, survived.

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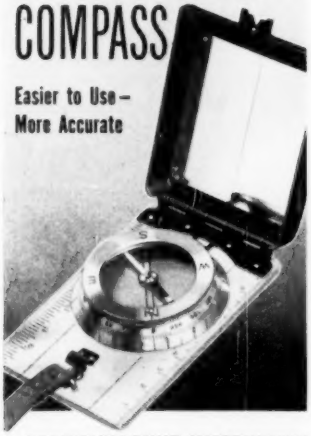

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Unused Wood Resources

Providing new opportunities for the development of forest products industries in Washington, the first of a series of inventories of unused wood resources in the state has been released by the Washington Institute of Forest Products.

The bulletin, covering Whatcom, Skagit, Snohomish, and Island Counties, is part of the most comprehensive state-sponsored forest inventory ever conducted in the western United States. The report contains facts and figures never before available on the amount, location, and accessibility of unused wood supplies in the four counties. Later reports will be published summarizing similar information for all other areas of the state.

The surveys are being conducted by special field crews under the supervision of Ralph G. DeMoisy, technical director and John W. Allen, field supervisor, of the institute. The agency operates under the Washington State Department of Conservation and Development.

In recent years, better logging equipment and the development of new markets have made it practical to remove wood formerly not economically accessible. For the purposes of the inventory, material lying within 500 feet of a road was considered available.

Very little manufacturing leftovers were found, because of the high utilization in most plants. Many mills operate by-products plants along with their primary installations.

ECA Aids German Forestry

The Marshall Plan program to help the Federal Republic of Germany gain more efficient agricultural output through knowledge of American technical advances has now extended into the fields of forestry and livestock.

In the forestry field, the new ECA projects provide for two U. S. experts to spend three months on a survey-study in the Federal Republic of Germany, and for two German specialists to spend three months in the United States.

The U. S. foresters are George F. Burks and A. A. Hasel of the U. S. Forest Service. They will check present German estimates of possible forest harvests to determine their accuracy, and review and aid in modernizing German systems and procedures used for making forest surveys.

ECA dollar costs for the two projects in the Federal Republic are estimated at $13,300 for the livestock program and $6,300 for the forestry survey.

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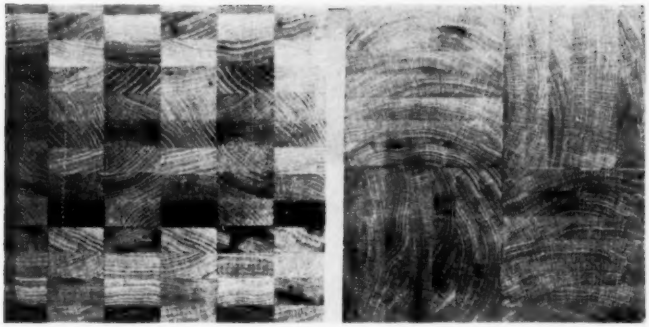

A NEW TYPE OF WOOD FLOORING has been developed by Dr. J. H. Kraemer in the wood research laboratory of the Department of Forestry and Conservation at Purdue University. It is designed to involve the conversion of sawmill slabs or low grade lumber into a high value product by simple and economical methods. The flooring units are composed of small blocks with the grain vertical, and glued on the radial (or tangential) surfaces so that the bearing surface is the end grain or cross-sectional surface. The units are of two forms—one, 6 by 6 inches and the other, 12 by 12 inches. They are treated with a moisture-resistant sealer and are pre-finished and ready to lay like tile in a commercial rubber-based mastic. This flooring can be made of any dense hardwood and has many advantages over the ordinary types. It is harder, more wear-resistant, has a smoother surface, presents a more attractive appearance, is easier to maintain, has more stability in place, and is easier to install than regular hardwood flooring. Service test panels have been installed in one of the most heavily used buildings on the campus.

F. C. Craighead Retires

Dr. Frank C. Craighead, for nearly 27 years in charge of U. S. Department of Agriculture investigations on the insect pests that affect forests and forest products, has retired, effective May 1. D. E. Parker, assistant leader of the Division of Forest Insect Investigations for the past three years, is acting in charge, pending appointment of a successor to Dr. Craighead.

Dr. Craighead entered federal service in 1910 as a temporary forest guard in the Forest Service. Except for a 3-year period as a forest entomologist in the Canadian government, he was in the service of the department until his retirement. He holds a B. S. degree in forestry and biology from Pennsylvania State College, and an M. S. and Ph. D. from George Washington University.

Dr. Craighead was born in Cumberland County, Pa., in 1890. As a leader in investigating forest insect pests, he and his associates in the division which he headed, together with cooperating entomologists, developed nearly every major advance in the control of insect plagues in forests, including the most recent spectacular use of aircraft and DDT sprays.

Dr. Craighead was among the first of the entomological scientists to appreciate the importance of insects in forest resource conservation. A recent book, *Insect Enemies of Eastern Forests*, prepared under the supervision of Dr. Craighead, points out that no less than 200 million dollars worth of lumber are lost each year to insect pests.

Katmai Monument To Have Visitor Accommodations

Katmai National Monument, on the Alaska Peninsula, will provide visitor accommodations this summer for the first time since its establishment by President Woodrow Wilson in 1918.

The National Park Service has just issued a 5-year permit to Northern Consolidated Airlines, Inc., of Anchorage and Fairbanks, Alaska, under which that company will operate two camps within the monument, with the main camp at the mouth of Brooks River, and will provide airplane transportation to them from Anchorage. In addition, the company will establish two camps on lands administered by the Bureau of Land Management.

Katmai is the largest of the national monuments administered by the Park Service and has many miles of frontage on Shelikof Straits. Lying west of Kodiak Island, it contains 2,697,590 acres of land and water. It has been known to wilderness fishermen for its rainbows, Dolly Varden, grayling, mackinaw, and salmon; and the fishing is expected to be one of the principal attractions.

ECA Aids Tropical Wood Production

Rare tropical woods from the French Cameroons in Africa may soon appear in the world's living rooms with the help of Marshall Plan and other American aid.

The Economic Cooperation Administration has announced that about $1,600,000 worth of American machinery and other equipment has gone into a sawmill and logging camp now being established by a French firm at Eseka in the jungles of the French Cameroons. ECA supplied $400,000 worth of aid, and the U. S. Export-Import Bank $1,200,000.

By next June or July, the Cameroons expect to introduce woods never before produced in quantity to cabinet and furniture makers. These woods include ekki (Bongossi), atonu, aszena, iroko (or roko), and apara. Mahogany also is on the list. Annual production of about 540,000 cubic feet of rare lumber is anticipated at the outset.

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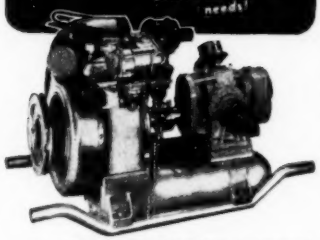

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Georgia Association Meets

About 300 members and guests were in attendance at the 26th annual meeting of the Georgia Forestry Association, April 14.

Governor Herman Talmadge outlined the expansion in forest protection and forest development activities of the Georgia Forestry Commission during the past year. He announced that in addition to the 80 counties that now have organized fire protection, there are some 10 or 12 additional counties that will be placed under the program effective July 1, and that sufficient monies will be made available by this administration during the coming fiscal year to carry out a full-scale program in all the participating counties.

The association president, Kirk Sutlive, reviewed the past progress and accomplishments of the association and told of the part the organization has played in enlisting the cooperation and support of the public in forest protection and development.

James W. Cruikshank, forest economist, Southern Forest Experiment Station, discussed "Plans for the Forest Survey of Georgia", and Marlin Bruner, E. I. DuPont Company spoke on "Chemistry and Trees." State Forester Gnyton DeLoach reviewed the expansion in forest protection and development activities of the Georgia Forestry Commission during the past year.

A feature of the meeting was the naming of Georgia's first five Master Tree Farmers. Frank Heyward, Gaylord Container Corporation, gave an illustrated lecture on the growth of pine plantations.

Five new directors of the association were elected: A. R. Shirley, Valdosta; R. H. White, Jr., Atlanta; Hobart Manley, Jr., Savannah; Kirk Sutlive, Savannah; and John McElrath, Macon.

Zimmerman Transferred To Bureau of Land Management

William Zimmerman, associate director of the Bureau of Indian Affairs has been transfered to the Bureau of Land Management as assistant director. He has been associated with the Indian Bureau both as associate commissioner and as assistant commissioner for the past 17 years. Mr. Zimmerman was appointed assistant Indian Commissioner in 1933, and in that capacity, and as associate director of the agency, has served continuously with the Department of Interior since he entered the federal service.

N.F.I.C. Establishes Budget, Notes Increased Radio Use

Although a national budget was established at a meeting on May 4 of representatives of National Forest Industries Communications, the western region continues to provide major financial support, according to reports presented.

N.F.I.C. is the organization through which the Federal Communications Commission coordinates radio frequency allocations to tree farmers, loggers, and industries with related woods operations.

Officers, who were unanimously re-elected, are Robert W. Olin, chairman; Robert Wasley, vice chairman, and Elmer L. Surdam, secretary.

Mr. Surdam reported that over fifty operations, including one cooperative undertaking, are now using radio in the western region, eight in the southern region, one in the eastern region, and two in the Lake States.

The national budget for 1950 of $4,000 is to be raised by voluntary contributions from forest industries and associations in the four regions. The funds will be used to secure legal counsel at F.C.C. hearings, to maintain records in Washington, D. C., and to provide travel and operating expenses. Mr. Surdam is employed by the western region which allows him to serve as national secretary until such time as operators throughout the country better realize the values of radio communication and wish to engage a full-time national secretary.

Clyde S. Martin, who attended the meeting, cited cases where the availability of radio saved a life and prevented serious accidents during the past year in the West.

New Portable Radio

A new, completely portable, FM communication unit for the 30 to 50 megacycle band is now available for forestry, logging, construction, and transportation industries according to announcement from Radio Specialty Manufacturing Co., Portland, Oreg.

This new "pack set" FM unit's total weight including self-contained batteries is less than 25 pounds. It has a power output of 1 to 1½ watts. Heavy duty type battery packs, or vibrator power supply operating from a car battery can be plugged into the FM unit to boost the power output as high as 7½ watts for more permanent or longer communicating distances.

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World's First Natural Resources School, University of Michigan

The world's first School of Natural Resources will be established at the University of Michigan next fall. It will expand the activities of the present School of Forestry and Conservation, which it will replace.

"Through the new school, teaching and research will be widened to consider everything which nature has placed on, under and over the earth in their relation to man," Alexander G. Ruthven president of the university said in making the announcement. He emphasized that conservation education would occupy an important place in the new school under provisions of a 10-year $100,000 grant from the Charles Lathrop Pack Forestry Foundation.

Dr. Stanley A. Cain has been appointed Charles Lathrop Pack Professor of Conservation. He will develop comprehensive graduate and undergraduate programs in the conservation of natural resources along much broader lines than those traditionally followed in the training of the forester, wildlife manager, or other specialists.

Dr. Cain is now in charge of botanical research at the Cranbrook Institute of Science. In addition to the Pack professorship, Dr. Cain will also have the rank of professor of botany in the College of Literature, Science and the Arts, and research associate in the Laboratory of Vertebrate Biology. An additional grant from the Pack Foundation of $30,000, for conservation research will largely be administered by Dr. Cain.

Natural resources of all kinds, both organic and inorganic, will be considered in the curriculums of the new unit, according to Samuel T. Dana, dean of the present School of Forestry and Conservation, who will continue as dean of the School of Natural Resources.

Research into the management and development of natural resources as well as service to the entire state in conservation and wise use of resources will be a part of the school's activities, he said.

Professional education will continue to be given in forestry, wood technology, wildlife management, and fishery management, Dean Dana said. In addition, nonprofessional courses and programs dealing with these and other resources, such as soils, minerals, and waters, will be offered along with land-use planning and general conservation.

These programs will cover matters of basic, general interest relating to distribution, characteristics, utilization, and conservation of natural resources and their place in the national economy. Agricultural and mineral resources will be considered in these programs, but Dean Dana emphasized that no professional training in agriculture or mining engineering will be offered.

"The establishment of the School of Natural Resources is a logical further step for the University to take at this time," Dean Dana said. "In 1881, the University offered the first regular courses in forestry to be given in the United States. In 1903 the University of Michigan established one of the first separate departments of forestry. Then in 1927 this was expanded into the first School of Forestry and Conservation. The time is now ripe to replace that school by a still more comprehensive School of Natural Resources which will again be the first of its kind. This is particularly significant for the state because of its rich resources in soil, forests, wildlife, fish, minerals, and water. The new school can be of tremendous service to all of Michigan by mobilizing the forces of the entire University in a field of basic importance to every citizen of the State."

Arboretum Named For Dr. Edmund Secrest

On May 10, a Forestry Day program at the Ohio Agricultural Experiment Station, Wooster, was held in honor of the memory of Dr. Edmund Secrest who served with the station from 1906 until his retirement in 1947. Dr. Secrest died in 1949.

The arboretum of the station, which Dr. Secrest nurtured as part of the forestry research program, has been expanded since 1908 to include over 600 species and varieties of trees and shrubs from many parts of the world. The arboretum was officially proclaimed "the Secrest Arboretum" by Warner Pomeren, president, Board of Control, Ohio Agricultural Station. Mrs. Secrest was present to accept the proclamation.

Chairman of the Forestry Day was L. L. Rummell, director of the station. Dr. Howard Lowry, president, The College of Wooster, and Horatio Ford, president, Ohio Forestry Association, delivered addresses concerning the life and work of Dr. Secrest and the important contributions of the arboretum to forestry in Ohio.

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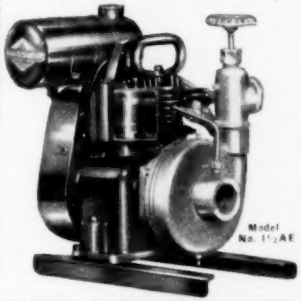

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Range Meeting To Be Held At Flagstaff

The Arizona Section of the American Society of Range Management and the Interagency Range and Livestock Committee will hold a joint meeting at the Fort Valley Experimental Forest near Flagstaff, Ariz. on June 13 and 14. Important range problems that will be discussed are: "How far will the cow dollar stretch?", John McLernon, agricultural advisor, Bank of Arizona; 'Effects of fire on perennial grasses of the ponderosa pine woods," Harold Weaver, area forester, U. S. Indian Service; "Range problems of a northern Arizona ranch," John Babbitt, president, Arizona Cattle Growers Association; "Big game problems in the Southwest," O. N. Arrington, State Game and Fish Commission; "Estimating perennial grass utilization on semidesert cattle ranges by percentage of ungrazed plants," Mack Roach, U. S. Forest Service; a panel discussion of "Range improvement" by G. E. Glendening, Joe Wagner, A. L. Brown, and Fred Lavin; and a panel discussion of "Range condition" by C. E. McDuff, J. F. Arnold, J. S. McCorkle, and R. R. Humphrey.

An all day field trip to observe reseeding and management practices and problems is planned for June 14.

Dry Kiln Club Organized

Thirty men from furniture and lumber plants who completed the first kiln drying course at N. C. State College, Raleigh, N. C., have organized a dry kiln club as a means of keeping up with new developments.

The first meeting of the club was held Saturday, May 13 at the George C. Brown Company plant, Greensboro, N. C.

The kiln drying short course, co-sponsored by the Southern Furniture Manufacturers Association, was the first offered by a college in the South. Instructors for the course were E. F. Rasmussen, kiln engineer, Forest Products Laboratory, Madison, Wis.; W. R. Smith, Forest Utilization Service, Asheville, N. C.; and R. M. Carter, School of Forestry, N. C. State College.

The May 13 program, starting at 2 p. m., included a tour of the host company's seasoning yard, dry kilns, and manufacturing plant.

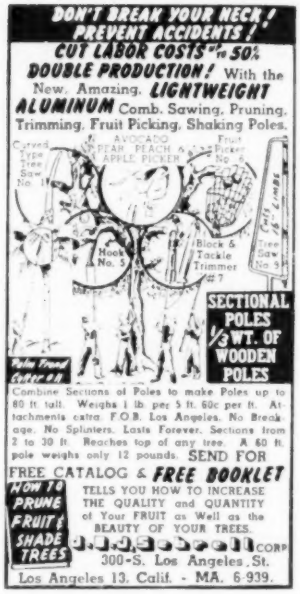
Discussion of the new kiln under construction and new methods of drying and conditioning lumber were guided by the kiln club president Charles T. Griffin, Halsey Hardwood Company, Edenton, N. C.

Further information about the club may be obtained from the School of Forestry, N. C. State College.

New Device for Aerial-Photo Interpreters

The parallax wedge is becoming increasingly important as a rapid and relatively accurate method of measuring tree heights and other elevation differences on vertical air photos. A stereogram developed to speed the training of students in the use of the wedge is reported in Station Note No. 60 of the Central States Forest Experiment Station, U. S. Forest Service, Columbus, Ohio.

A period of hours is often consumed in demonstrating to students the correct appearance of a parallax wedge under stereoscope. The stereogram is a simple training aid illustrating this stereo-illusion of the wedge on a photo image of a group of trees.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National Forest Board of Review Renamed Advisory Council

The National Forest Board of Review, established in May 1948, is now renamed as the National Forest Advisory Council. The change in name was made because: (1) there was a need to differentiate the Board of Review more clearly from the National Forest Advisory Board of Appeals, a five-man board established on January 17, 1950; and (2) there was a desire to clarify the original intent that the Board of Review would be called upon to advise on only those appeals involving matters of general policy. The responsibility for advising the Secretary on ordinary appeals is now the function of the National Forest Advisory Board of Appeals.

The National Forest Advisory Council is comprised of not less than three consultants, who may be designated from time to time by the Secretary of Agriculture. It will advise the Secretary on matters of general policy concerning the use by the public of national forests and other lands under the administration or control of the Forest Service. The Advisory Council will act on appeals "when the Secretary desires the Council's advice in the case of such an appeal involving a question of general policy."

Secretary Brannan stated that he is asking the three men who comprised the former National Forest Board of Review to continue to serve as members of the newly established Advisory Council. They are Dr. Jonathan Forman, Columbus, Ohio; Prof. Gilmour B. MacDonald, retired, formerly head, Department of Forestry, Iowa State College, Ames; and Dr. Roland Roger Renne, president of Montana State College, Bozeman.

AFPI Names Two Field Officers

American Forest Products Industries has announced the appointment of John M. Rottier, of Grand Rapids, Mich., as district manager for the Lake States region, and James B. Craig as head of its New York information bureau.

Mr. Rottier was director of publicity for the Idaho Department of Forestry. In his capacity as district manager, Mr. Rottier will direct activities of AFPI in the states of Wisconsin, Minnesota, Michigan, Ohio, Indiana, Illinois, Iowa, North Dakota, South Dakota, and Nebraska. His office is at 1124 N. Astor St., Milwaukee.

A graduate of Northwestern University's Medill School of Journalism, Mr. Rottier directed the publicity program for Keep Idaho Green and focused national attention on that state's forest fire prevention program.

James B. Craig was formerly associate editor of *American Forests* magazine. Mr. Craig's office, at 11 West 42nd St., New York, is prepared to supply information on forestry and the forest industries to writers, publishers, editors, and educators. His appointment marks the first time this industry-sponsored organization has maintained a full-time office in New York City.

An experienced writer on forestry subjects, Mr. Craig has served on the editorial staff of *American Forests* magazine since 1947. During World War II Mr. Craig saw action with the Forty-first Division in the Pacific.

He was born in Salem, N. Y., and is a graduate of Kent State University in Ohio. His newspaper experience includes editorial assignments with the Akron *Times-Press*, The Athens (Ohio) *Messenger*, Cumberland (Md.) *News* and *Evening Times*.

Condemnation Requested For Everglades Park Acquisition

The Secretary of the Interior has requested the Attorney General to commence condemnation proceedings for the acquisition of all private land in Everglades National Park, Florida. The park contains approximately 1,228,500 acres of land and submerged land, of which about 126,000 acres are still in private ownership.

Payment for the remaining privately owned land is to be made from the balance of the $2,000,000 fund donated to the federal government by the State of Florida in 1947 for acquisition of acreage for the park. At that time, there were approximately 357,000 acres of private land within the park. Since then, approximately 231,000 acres—65 percent of the private land—has been purchased by the National Park Service.

Positions Wanted

Graduate forester, 27, married. One year experience with State Division of Forestry in forest management and fire control. Desires permanent position with forestry-minded company. References and details on request.
Box C, Journal of Forestry, Mills Building, Washington 6, D. C.

Graduate Forester, 32; three years' experience with the U. S. Forest Service; manager of mill and logging operation for large company 3 years; five years' experience military command and operations staff duties, desires permanent position with progressive private forest enterprise or forest industry. Prefer production or marketing. Details and references upon request.
Box D, Journal of Forestry, Mills Building, Washington 6, D. C.

Position (private or state) desired in publicity, information, or education. Editorial and advertising experience. Three years' private and federal forestry experience. B.S.F., University of Michigan, 1942.
Box E, Journal of Forestry, Mills Building, Washington 6, D. C.

Forester, 27, single. Three years' experience in pulpwood and sawmill logging. Graduate business courses. Desires permanent position with consultant or forest management with progressive company. Details and references upon request.
Box F, Journal of Forestry, Mills Building, Washington 6, D. C.

Forester wants teaching or other forestry job of outstanding social significance. Prefer teaching general farm forest management in progressive college or university. Will consider extension work. Might be available for teaching or extension work in foreign country. Can supplement forestry teaching with soil conservation teaching. Four years experience in the forestry phases of soil conservation work and six years in forest management—all in the southeast U. S.; two summers in work camps with the American Friends Service Committee; M.F. degree; now employed by the Board of National Missions, Presbyterian Church, U.S.A., as a forest manager. Age 34, married, one child. References furnished.
Box G, Journal of Forestry, Mills Building, Washington 6, D. C.

University of Michigan School of Forestry graduate, M.F. in forest management, desires position with private forestry organization. Three years with Army engineers; one year with midwestern pulp and paper company surveying, mapping, cruising, management planning. Summer and school experience as sawmill operator, grader, tallyman. Excellent references and detailed information on request. Prefer East, Midwest, or South.
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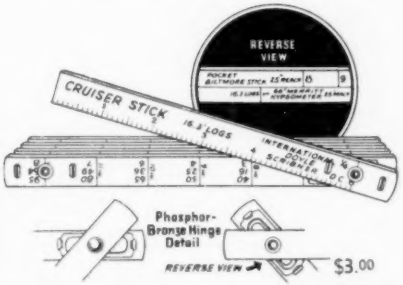

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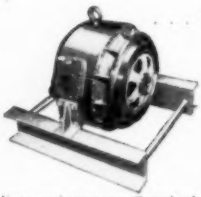

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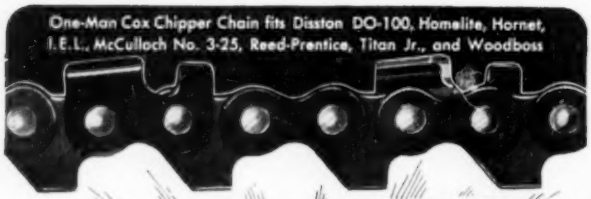

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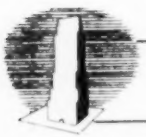

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